



**US Army Corps  
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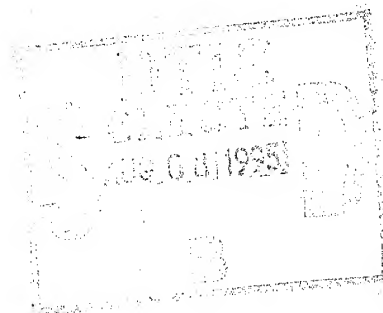
# Environmental Compliance Audit Handbook (ECAH)

## U.S. Fish and Wildlife Service

The number of environmental laws and regulations have continued to grow in the United States and worldwide, making compliance with these regulations increasingly difficult. Environmental assessments became a way to determine compliance with current environmental regulations. The Fish and Wildlife Service has adopted an environmental compliance program that identifies compliance problems before they are cited as violations by the U.S. Environmental Protection Agency (USEPA).

Beginning in 1993, the U.S. Army Construction Engineering Research Laboratories (USACERL), in cooperation with the Fish and Wildlife Service, began research on the Environmental Compliance Audit Handbook (ECAH). The concept was to combine Code of Federal Regulations (CFRs) along with good management practices and risk-management issues, into a series of checklists that show legal requirements and which specific items or operations to review.

The handbook is continually updated to address new environmental compliance laws and regulations.



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U.S. ARMY CONSTRUCTION ENGINEERING RESEARCH LABORATORIES

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## FOREWORD

This research was performed for the Fish and Wildlife Service (FWS), Service Pollution Control Office (SPCO), under order number IA1448001095007, *Fish and Wildlife Service Compliance Manual*, dated November 1994. The FWS technical monitor was Billy Umsted, FWS-SPCO.

The research was performed by the Planning and Management Laboratory, Environmental Processes Division of the U.S. Army Construction Engineering Research Laboratories (USACERL). The Principal Investigator was Donna J. Schell, Environmental Processes Division (PL-N). Jerry Benson is Acting Division Chief (PL-N), David Joncich is Acting Lab Chief (PL),

LTC Rehbein is Commander and Acting Director, USACERL. Dr. Michael J. O'Connor is Technical Director.

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## NOTICE

This handbook is intended as general guidance for personnel at FWS facilities. It is not, nor is it intended to be, a complete treatise on environmental laws and regulations. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information contained herein. For any specific questions about, or interpretations of, the legal references herein, consult appropriate counsel.

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## **ENVIRONMENTAL COMPLIANCE AUDIT PROGRAM (ECAP)**

The FWS Environmental Compliance Audit Program (ECAP) U.S. Environmental Compliance Auditing Handbook (ECAH) was developed by USACERL to simplify the environmental evaluation process for the Fish and Wildlife Service (FWS). The objectives of the ECAP program are to:

1. establish FWS-wide standards for environmental compliance audits as a means of ensuring the Services's observance of all applicable environmental laws and regulations
2. thru the auditing process (560 FW4) and the use of ECAH, assure Regional Directors and environmental program managers that environmental programs are effectively addressing environmental problems that could:
  - a. impact FWS mission effectiveness
  - b. jeopardize the health of Service personnel or the general public
  - c. significantly degrade the environment
  - d. expose the FWS to avoidable financial liabilities as a result of noncompliance with environmental requirements
  - e. erode public confidence in the FWS and the U.S. Department of the Interior (DOI)
  - f. expose individuals to civil and criminal liability
3. secure information through auditing processes addressed in the handbook, that will permit FWS Managers to address existing environmental problems and to anticipate and prevent future environmental problems
4. provide data, through the auditing process, for use in identifying, validating, prioritizing, programing, and budgeting environmental requirements.

Any change or suggestion for improving this guidance handbook should be forwarded to Billy Umsted at the FWS, Service Pollution Control Office (SPCO), in Lakewood, CO.

The information in this handbook applies to all FWS facilities in the United States and its territories. The contents of this handbook are up-to-date as of 02 June 1995.

## **TYPES OF ENVIRONMENTAL AUDITS**

The Service's auditing program is covered in 560 FW 4. Audits will be of three types:

1. Individual Audits - Facility Managers will conduct self audits. This type of audit will be documented using the Environmental Compliance Questionnaire (ECQ) (Appendix A, see page A-1), filed locally, and submitted to the SPCO.
2. Internal Audits - Regional offices will conduct audits of their field stations and units. This type of audit will be documented as detailed in the Environmental Compliance Audit Process (see page 7). The results will be filed locally and submitted to the SPCO.
3. External Audits - The SPCO will conduct audits of field stations that are selected annually. The audits will be conducted and reported in accordance with the Environmental Compliance Audit Process.

## **ENVIRONMENTAL COMPLIANCE AUDIT PROCESS**

The environmental audit process can be divided into three distinct phases:

1. pre-audit activities
2. site audit activities
3. post audit activities.

This handbook incorporates the first two phases of the program management process.

**Pre-Audit Activities** - Six key activities should be completed before an audit team begins the audit activities.

1. **Environmental Compliance Questionnaire (ECQ).** The purpose of the ECQ is to collect information that will familiarize the audit team with the facility and its operations so that they are able to review the applicable regulations and prepare a detailed audit schedule. The ECQ is an essential part of pre-audit activities and is also an excellent tool for ensuring that internal audit team members are starting from the same base of information. Appendix A contains a sample ECQ. Once the activities that occur at a facility are known, Appendix B (see page B-1), a logic table, can be used to identify potentially applicable handbook sections. Appendix B indicates the major environmental operations and activities at a typical FWS facility and the handbook sections within which they are addressed. As shown, many activities and operations cause environmental impacts in more than one area, and are therefore addressed in more than one section.
2. **Define Audit Scope and Team Responsibilities.** The facility or FWS may wish to place special emphasis on certain sections or to review additional areas not covered in the handbook. These goals must be stated clearly so the audit can be planned properly. Additionally, the duration of the audit, appointment of team members, and handling of tenants and off-facility sites must be addressed. Finally, responsibilities for each of the sections must be assigned to team members as appropriate.
3. **Develop Audit Schedule.** The team should develop a detailed schedule that includes the activities planned for each day.
4. **Review Relevant Regulations.** Once the audit scope and responsibilities are known, the auditors should undertake a thorough review of relevant Federal, state, and local regulations affecting the facility. The applicable environmental regulations must be determined before the audit begins. If not already available, checklist items for state and local requirements must be added to the checklists in the audit handbook.

5. Review Audit Sections. Each auditor should know the regulatory requirements, schedule, and be familiar with the audit checklists that will be used.
6. Availability of Records. In addition to completing the ECQ, the Facility Manager should assemble all pollution control records listed in Appendix A prior to the arrival of the team. A list of possible records is listed at the end of the ECQ. Appendix C (see page C-1) provides some useful information as to how environmental records should be organized.

**Site Audit Activities** - Onsite, the auditors will conduct an inbrief (see Appendix D for a sample inbrief handout), record searches, interviews, and site surveys to identify potential problems or deficiencies at the facility. Operations are compared with environmental standards and any deficiencies are written up as findings. The data collected should be sufficient, reliable, and relevant to provide a sound basis for audit findings and recommendations. A Finding Summary form is available to assist auditors in compiling needed information during an audit. A Finding Summary form should be completed for each finding during the audit. These forms comprise the basis of the audit report. The format and content for audit reports will be in a separate supplement. Appendix E (see page E-1) shows a completed sample Finding Summary form.

All items of the Finding Summary form must be filled in up to Sampling Results for negative findings and up to Criteria for positive findings. The **CONDITION** is a factual statement describing the status of the process, permit, or situation under investigation, and the **CRITERIA** is the environmental standard (Federal, state, local, FWS, Management Practice) the facility is being measured against. A condition may be positive if the facility is going above and beyond the requirements. **SUGGESTED SOLUTIONS** is an optional entry, and may include easily identifiable solutions to the deficiency. **COMMENTS** may include any corrective actions already taken or scheduled, or any other appropriate information pertaining to the finding. Once completed, a finding has to be ranked for the severity of noncompliance. The ranking options are explained on the back of the Finding Summary.

For example, a team member assigned to evaluate the facilities' hazardous waste management program, which is a small quantity generator (SQG), visited the facility's hazardous waste storage area. The auditor noticed some drums were damaged and took a count of the total number of drums and the number of damaged drums to get an accurate description for the finding. Five of the eight drums were rusted and bulging. Checklist item 4-31 in the FWS handbook states that 40 CFR 262.34(d)(2) and 265.171 requires containers to not be leaking, bulging, rusting, or badly dented. The damaged drums were behind the others, so the site manager may have overlooked them during the regular inspections. The site manager immediately put overpack drums on order. The auditor is now ready to fill out a Finding Summary (see Appendix E).



A finding may be positive or negative. A positive finding is for a job, activity, or person who has gone above and beyond the regulatory requirements for protecting the environment. A negative finding is when there is an issue of noncompliance or a poor management practice.

Each finding is then assigned a maximum of 2 universal codes and a maximum of 2 section codes from the list in Appendix E. These codes enable the SPCO to better identify the root causes of noncompliance.

A copy of the Finding Summary forms is to be left at the facility by the audit team. See Appendix F for a sample tally sheet which can be used in the facility outbrief.

**Post-audit Activities** - The audit team is required to produce a Draft Findings Report within 30 days after the completion of the audit in accordance with the following format.

1. Section One. This contains an executive summary identifying where the audit was done, what was audited, and a list of the members of the audit team. It also provides background information on the site.
2. Section Two. This section contains the details on the regulatory compliance status of the audited facility. An explanation of the finding ratings is provided along with a compliance summary table indicating the number of findings in each category. The core of this section is a reproduction of the finalized draft regulatory findings.
3. Section Three. This section contains the management practice findings that were identified during the audit.

The Draft Findings Report is sent to the Regional Office for distribution and another copy is sent to the SPCO. Upon receipt of the report, the facility has 60 days to develop a reply to each of the regulatory findings (Section Two). A reply can be as simple as "situation corrected on 30 June 1994," "work order request submitted on 30 May 1994 for construction of cement pad," or "plan is scheduled to undergo review and updating in August of 1994." The facility will be required to develop a corrective action for every regulatory finding. The facility is not required to respond to the management practice findings in Section Three but it is strongly urged to do so. If the facility has received a significant finding, this finding will be forwarded to the Directorate level. Other reports without significant findings will be signed at the Division level.

Upon receipt of corrective action replies, the audit team leader will issue a final report within 30 days. If a reply/corrective action is not appropriate to the finding, the audit team leader will contact the facility and resolve the issue. Three copies of the final report will be sent to the SPCO for final signature. The SPCO will forward a copy to the facility and the responsible Region.

The Regional Compliance Coordinator will participate in the tracking of progress on corrective actions. The facility will submit a report to the Region 6 mo after the finalization of the report detailing the status of the corrective actions. Reporting will continue every 6 mo until corrective actions are completed.

## HANDBOOK OBJECTIVES AND ORGANIZATION

If not controlled or properly managed, FWS facilities engage in many operations and activities that can cause environmental impacts on public health and the environment if not controlled or properly managed. Many of these activities and operations are regulated by Federal, state, and local regulations, and by FWS regulations/policies.

The contents of this handbook are based on Federal environmental regulations and are to be supplemented locally using state and local environmental regulations that are applicable to FWS facilities and are more stringent than Federal regulations included in this handbook. The handbook is updated annually. This handbook, with local supplements, is intended to serve as the primary tool in conducting an environmental compliance audit. Specifically, this handbook:

1. complies with applicable Federal regulations and FWS and DOI environmental directives applicable to FWS operations and activities (NOTE: Due to extensive revisions currently taking place, FWS manual chapters have not been included in this document but will be included in the next version.)
2. synthesizes environmental regulations, management practices (MPs), and risk management issues into consistent and easy to use checklist
3. serves as an aid in the compliance process and management action development phases of the ECAP.

After a review of these activities at FWS facilities, it is apparent that there are major categories of environmental compliance into which most environmental regulations and FWS activities could be grouped. This handbook is divided into 10 sections that correspond to major compliance categories.

1. Air Emissions Management
2. Drinking Water Quality
3. Hazardous Materials Management
4. Hazardous Waste Management
5. Pesticide Management
6. Petroleum, Oil, and Lubricant (POL) Management
7. Solid Waste Management
8. Special Pollutants Management (includes asbestos, PCBs, radon, and noise)
9. Underground Storage Tank (UST) Management
10. Wastewater Management

Each section is organized in the following format:

- A. Applicability.** This provides guidance on the major activities and operations included in the section and a brief description of the major application.
- B. Federal Legislation.** This identifies, in summary form, the key legislative issues associated with the compliance area in the Federal law.

- C. State/Local Regulations.** This identifies the typical compliance areas normally addressed in state and local regulations. This section does not present individual state/local requirements. An audit of state and local requirements must be conducted and supplemental questions prepared to cover these requirements. The handbook is prepared in loose leaf form to allow state and local requirements to be easily inserted. Checklist item 3 in each section lists issues that are typically regulated by the states.
- D. FWS/DOI Manuals.** This identifies the FWS and DOI manuals which have been finalized as of the publication of this handbook.
- E. Key Compliance Requirements.** This summarizes the significant compliance requirements associated with the regulations included in the checklist. It is a brief abstract summarizing the overall thrust of the regulations for that particular compliance category.
- F. Key Compliance Definitions.** This presents definitions taken from the Code of Federal Regulations (CFRs) for those key terms associated with each compliance category.
- G. Compliance Audit Checklists.** The final portion of each section contains checklists and tables and figures composed of requirements or guidelines that serve as indicators to point out possible compliance problems, as well as practices, conditions, and situations that could indicate potential problems. They are intended to focus attention on the key compliance questions and issues that should be investigated. Instructions are provided to direct the auditor to the appropriate action, references, or activity that corresponds to the specific requirement or guide.

## USING THE CHECKLISTS

Understanding the layout and structure of the checklists facilitates their use during the audit.

- **Explanation of Layout/Content.** The checklist portion of each protocol section is divided into two columns. The first of these is a statement of a requirement. This may be a strict regulatory requirement, in which case the citation is given, or it may be a requirement that is considered to be a management practice to maintain compliance, but which is not specifically mandated by regulation. The second column gives instructions to help conduct the compliance audit. These instructions are intended to be specific action items that should be accomplished by the investigator. Some of the instructions may be a simple documentation check taking a few minutes; others may require physical inspection of a facility. In an effort to simplify using the checklists, measurements which were not converted into a metric or English equivalent in the regulations have been converted by USACERL. These conversions done by USACERL appear in [ ]'s while conversions provided in the regulations appear in ( )'s.
- **Worksheet.** At the end of each section is an audit worksheet. This worksheet should be reproduced and used during the audit to take notes. It is designed to be inserted between each page of the checklists, allowing the main text to be kept usable for the next audit. The worksheet is divided into two columns. The first column is a quick check for those items that are in compliance (C), not applicable (N/A) to the facility being reviewed, or require management action (RMA). The second column on the worksheet allows for more detailed notations or comments. These notations will provide a record for use in preparing the final report. These notations should include both situations of substandard operation needing attention and those operations that are above requirements or provide examples of good programs. For future reference and clarity, it is essential that a reference to building numbers or locations be made during the review.
- **Standard Checklist Items.** The first four checklist items in each section of the handbook are standardized. The first item requires a review of any previous audit documents. The second item requires a review of state and local regulations as well as indicating issues commonly regulated at the state and local level. The third item provides a place for auditors to write up findings that are based on regulations that have been promulgated since the publication of the handbook or regulations not included in the handbook. The fourth item suggests that copies of notices of violation (NOVs) be forwarded to the Region and the SPCO.

The audit procedures are designed as an aid and should not be considered exhaustive. Use of the checklist requires the auditor's judgment to play a role in determining the focus and extent of further investigation. A review of appropriate

state regulations should be conducted so additional review questions that reflect the substantive requirements of state/local regulations pertinent to individual facilities can be included in the checklists.

## **COMMON FINDINGS OF NONCOMPLIANCE AT FWS FACILITIES**

Some of the most common compliance problems at FWS hatcheries and refuges are listed below. Associated checklist items numbers are listed in parenthesis.

### **A. HATCHERIES**

#### **Air Quality**

- Repairing chlorofluorocarbon (CFC)-containing apparatus' without recycling/reclaiming. (1-17, 1-19, 1-20, and 1-24)
- Old refrigerators sitting in the boneyard, increasing the possibility of venting CFCs.(1-20 or 1-27)
- Missing signs from fuel dispensing pumps.(1-8, 1-9)

#### **Drinking Water Management**

- Incomplete or no records of testing of drinking water. (Depends on the classification of the system)

#### **Hazardous Materials Management**

- No written Hazard Communication Program. (3-12)
- Incomplete file of Material Safety Data Sheets (MSDSs). (3-9)
- No list of hazardous materials or copies of MSDSs submitted to the local emergency response committee or local fire department. (3-7)
- Unlabeled drums and containers. (3-10)
- Lack of correct signs on storage areas.(Depends on type of storage)
- Storage of flammable/combustible materials in cabinets or storage buildings that do not meet regulatory criteria. (3-32, 3-34, and 3-35)
- Compressed gas cylinders stored without being chained or restrained in another manner. (3-46)

#### **Hazardous Waste Management**

- Unusable hazardous materials stored with usable hazardous materials when they need to be disposed of as hazardous waste. (4-7)
- Containers of unknown substances stored at facilities.(4-7)

#### **Pesticide Management**

- Equipment used for the application of pesticides not clearly identified as such. (5-27)

### **Petroleum, Oil, and Lubricant (POL) Management**

- No Spill Prevention Control and Countermeasure (SPCC) plan. (6-5)
- No spill equipment or containment to prevent petroleum product spills from entering waterways. (6-15)
- No secondary containment for aboveground storage tanks (ASTs) of greater than 660 gal. (6-16)

### **Solid Waste Management**

- Trash piled up in an unauthorized dump site. (7-6 and 7-20)
- No recycling program. (7-14)
- Abandoned landfill sites. (7-2 and 7-40)

### **Special Pollutants Management**

- Personnel repairing water pipes that are asbestos-containing without accredited training. (8-62 and 8-63)
- The facility is unaware as to whether or not transformers at the site are polychlorinated biphenyl (PCB)-contaminated. (8-14)

### **Underground Storage Tank (UST) Management**

- No records of release detection monitoring. (9-16)
- No drawings, schematics, or information as to the type of UST at the facility. • USTs abandoned without correct closure or no documentation of state approved closure. (9-2, 9-29 through 9-31, 9-37)

### **Wastewater Management**

- No National or State Pollution Discharge Elimination System (NPDES/SPDES) Permit for discharge of wastewater. (10-5)

## **B. REFUGES**

### **Air Quality**

- Repairing CFC containing apparatus' without recycling/reclaiming. (1-17, 1-19, 1-20, and 1-24)
- Operation of small incinerators without state approval. (1-2)
- Old refrigerators sitting in the boneyard, increasing the possibility of venting CFCs. (1-20 or 1-27)
- Missing signs from fuel dispensing pumps. (1-8. 1-9)



### **Drinking Water Management**

- Incomplete or no records of testing of drinking water. (depends on classification of system)
- Old wells not capped or closed. (2-2)

### **Hazardous Materials Management**

- No written Hazard Communication Program. (3-12)
- Incomplete file of Material Safety Data Sheets (MSDSs). (3-9)
- No list of hazardous materials or copies of MSDSs submitted to the local emergency response committee or local fire department. (3-7)
- Unlabeled drums and containers. (3-10)
- Lack of correct signs on storage areas. (Depends on type of storage)
- Storage of flammable/combustible materials in cabinets or storage buildings that do not meet regulatory criteria. (3-32, 3-34, and 3-35)
- Compressed gas cylinders stored without being chained or restrained in another manner. (3-46)

### **Hazardous Waste Management**

- Unusable hazardous materials being stored with usable hazardous materials when they need to be disposed of as hazardous waste. (4-7)
- Unknown substances being stored onsite. (4-7)

### **Pesticide Management**

- Equipment used for the application of pesticides is not clearly marked as such. 5-27
- No records are kept of the applications of pesticides. (5-12)

### **Petroleum, Oils, and Lubricants Management**

- No SPCC plan. (6-5)
- No spill equipment or containment to prevent petroleum product spills from entering waterways. (6-15)
- Unlabeled or mislabeled containers of used oil. (6-36)
- ASTs of greater than 660 gal do not have secondary containment. (6-16)

### **Solid Waste Management**

- Trash piled up in an unauthorized dump site. (7-20 or 7-6)
- No recycling program. (7-14)
- Solid waste containers without lids on. (7-2 or 7-40)

### **Special Pollutants Management**

- The facility is unaware as to whether or not transformers at the site are PCB contaminated. (8-14)

### **Underground Storage Tank (UST) Management**

- No records of release detection monitoring. (9-16)
- No drawings, schematics, or information as to the type of UST at the facility.
- USTs abandoned without correct closure.(9-37)

### **Wastewater Management**

- No NPDES/SPDES permit. (10-5)

## Appendix A

### ENVIRONMENTAL COMPLIANCE QUESTIONNAIRE

Please fill out this questionnaire as completely as possible. It will provide background information necessary to plan and conduct an environmental compliance audit at the facility.

Name of Facility: \_\_\_\_\_

Location/State: \_\_\_\_\_

County: \_\_\_\_\_

Region: \_\_\_\_\_

Organizational Code: \_\_\_\_\_

Point of Contact: \_\_\_\_\_

Phone Number: \_\_\_\_\_

Date Completed: \_\_\_\_\_

**Appendix A (continued)**

**QUESTION/DESCRIPTION**

**RESPONSE**

**REFERENCE**  
(If YES, see  
checklist  
items:)

**Section 1. Air Emissions Management**

1. Does the facility operate a fuel burner (central steam plant, or hot water steam boiler) or incinerator? \_\_\_\_\_

1-2, 1-5 and  
1-6

If YES for boilers, how large and what fuel is used?

Size

Fuel

_____	_____
_____	_____
_____	_____

If Yes for Incinerators, which of the following is burned (circle the applicable option):

trash

plant waste

animal carcasses

other \_\_\_\_\_

2. Does the facility dispense, store, or transfer gasoline? \_\_\_\_\_

1-7 through 1-  
12

Type: \_\_\_\_\_

3. Does the facility use any degreasers (solvent baths)? \_\_\_\_\_

1-36 through  
1-55

What is used in the degreasers? \_\_\_\_\_

4. Does the facility procure/use CFCs or halon substances? \_\_\_\_\_

1-13 through  
1-16

5. Does the facility repair any units containing refrigerant? (circle the applicable options) \_\_\_\_\_

1-17 through  
1-35

motor vehicles air conditioners

refrigerators

freezers

window air conditioning units

building (central) refrigeration

(continued)

**Appendix A (continued)**

<b>QUESTION/DESCRIPTION</b>	<b>RESPONSE</b>	<b>REFERENCE (If YES, see checklist items:)</b>
<b>Section 2. Drinking Water Management</b>		
1. Does the facility purchase its drinking water from a nearby municipality's water system?	_____	None applicable
2. Does the facility treat and distribute its own drinking water? If yes, answer the following:  How many people (family members included) reside year round on the refuge? _____  Does the Visitor's Center have its own drinking water fountain? _____  How many visitors does the facility average in a year? _____  What is typically the largest number of visitors in any one month? _____	_____	2-3 through 2-26
3. Does the facility draw water from its own well?	_____	2-2
4. Has the facility been classified by the state as a community water system?	_____	2-27 through 2-53
5. Has the facility been classified by the state as a noncommunity water system?	_____	2-54 through 2-56
6. Has the facility been classified by the state as a nontransient noncommunity, water system?	_____	2-57 through 2-75
7. Has the facility been classified by the state as a transient noncommunity water system?	_____	2-76
8. Is the facility located near a sole source aquifer?	_____	2-77
<b>Section 3. Hazardous Materials Management</b>		
1. Have there been any spills or releases of hazardous substances such as paints, solvents, acids, fuel, and/or pesticides at the facility?	_____	3-20 through 3-24
2. Does the facility stored onsite more than 1379 gal of fuel at any one time or 1350 lb of formalin?	_____	3-26 through 3-28

(continued)

**Appendix A (continued)**

<b>QUESTION/DESCRIPTION</b>	<b>RESPONSE</b>	<b>REFERENCE (If YES, see checklist items:)</b>
3. Does the facility operate a laboratory?	_____	3-16 through 3-19
4. Does the facility store any flammable/combustible liquids (i.e., paints, solvents) in lockers, storage sheds, tanks, or industrial areas? (circle applicable types of storage)	_____	3-29 through 3-45
5. Does the facility store compressed gases?	_____	3-46 through 3-47
6. Does the facility store acids?	_____	3-48
7. Does the facility transport or offer for transport hazardous materials?	_____	3-49 through 3-60

**Section 4. Hazardous Waste Management**

1. Is the facility a producer/generator/creator of hazardous waste?	_____	4-7 through 4- 10
Examples include waste paint, waste solvent, waste paint thinner, waste acids, and waste batteries.		
2. Does the facility generate less than 100 kg [220.46 lb, approx. 26.5 gal] of hazardous waste in 1 mo?	_____	4-11 through 4-21
3. Does the facility generate more than 100 kg [220.46 lb] but less than 1000 kg [2204.62 lb, approx. 265 gal] of hazardous waste in 1 mo?	_____	4-22 through 4-46
4. Does the facility generate more than 1000 kg [2204.62 lb] of hazardous waste in 1 mo?	_____	4-47 through 4-123

The following are hazardous wastes that may typically be found at a facility (check if used  
at this facility and indicate amount typically used in a year):

- solvents \* \_\_\_\_\_ liquid paint or spray paint booth air filters \_\_\_\_\_
- paint stripper or thinner \_\_\_\_\_ pesticides, insecticides, herbicides \_\_\_\_\_

(continued)

## Appendix A (continued)

### QUESTION/DESCRIPTION

### RESPONSE

REFERENCE  
(If YES, see  
checklist  
items:)

- ammunition, explosives \_\_\_\_\_ battery acid/unserviceable batteries \_\_\_\_\_
- Fluorescent light bulbs \_\_\_\_\_
- printing ink, ink solvents, and cleaners \_\_\_\_\_
- absorbent material and soil contaminated with hazardous waste \_\_\_\_\_
- waste oil (some states consider this a hazardous waste) \_\_\_\_\_
- other \_\_\_\_\_
- other \_\_\_\_\_
- other \_\_\_\_\_

\*This includes trichloroethane, methylene, chloride, tetrachloroethylene, 1,1,1 trichloroethane, carbon tetrachloride, chlorinated fluorocarbons, toluene, MEK, mineral spirits, xylene

5. Does the facility transport hazardous waste in its own vehicles? \_\_\_\_\_

4-119  
through 4-123

6. Is the facility considered a treatment, storage, and disposal facility? If yes, indicate if it is: \_\_\_\_\_

See the  
SPCO Sup-  
plement

Interim Status \_\_\_\_\_  
Permitted (Part B Permit) \_\_\_\_\_

### Section 5. Pesticide Management

1. Do facility personnel engage in the application of pesticides? \_\_\_\_\_

5-2 and 5-7  
through 5-13

2. Does the facility use contractor personnel to apply pesticides? \_\_\_\_\_

5-2 and 5-7  
through 5-13

3. Does the facility store, mix, or formulate pesticides? \_\_\_\_\_

5-14 through  
5-20

4. Does the facility store/use pesticides that are labeled DANGER, WARNING, POISON, or with the skull and crossbones? \_\_\_\_\_

5-21 through  
5-28

(continued)

**Appendix A (continued)**

<b>QUESTION/DESCRIPTION</b>	<b>RESPONSE</b>	<b>REFERENCE (If YES, see checklist items:)</b>
5. Does the facility apply agricultural pesticides?	_____	5-29 and 5-30
6. Does the facility dispose of pesticides?	_____	5-31 through 5-36

**Section 6. Petroleum, Oil, and Lubricant (POL) Management**

1. Does the facility have a Spill Prevention Control and Counter-measure (SPCC) plan?	_____	6-5 through 6-12
2. Have there been any discharges or spills of petroleum products at the facility of more than 5 gal to the environment?	_____	6-13 and 6-14
3. Does the facility have any aboveground POL storage tanks that are over 660 gal?	_____	6-15 through 6-19
4. Does the facility have any pipelines?	_____	6-20 through 6-30
5. Does the facility generate/store used oil?	_____	6-33 through 6-66

**Section 7. Solid Waste Management**

1. Does the facility collect or store solid waste onsite?	_____	7-6 through 7-13
2. Does the facility contract out the collection of its solid waste?	_____	7-5
3. Does the facility recycle anything?	_____	7-14 and 7-15

If YES, which of the following is recycled:

paper  
glass  
beverage cans  
cardboard  
other? \_\_\_\_\_

(continued)



**Appendix A (continued)**

**QUESTION/DESCRIPTION**

**RESPONSE**

**REFERENCE  
(If YES, see  
checklist  
items:)**

4. Does the facility have any dumps/landfills/land disposal sites on the property? \_\_\_\_\_

7-16 through  
7-40

Active? \_\_\_\_\_

Closed? \_\_\_\_\_ If closed, when was it closed? \_\_\_\_\_

If known, what was typically placed in the dump/landfill/disposal site? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. Is the facility planning or operating a new landfill? \_\_\_\_\_

7-41 through  
7-43

6. Does the facility handle or dispose of medical waste such as needles, bloody wastes, pathogenic waste, etc.? \_\_\_\_\_

7-44 through  
7-49

**Section 8. Special Pollutants Management**

1. Does the facility have any equipment that contains PCBs? \_\_\_\_\_

8-5 through 8-30

If YES, indicate which of the following are at the facility:

- transformers
- capacitors
- circuit breakers
- electromagnets
- switches
- heat transfer systems
- voltage regulators
- reclosers
- light ballasts
- other \_\_\_\_\_

2. Does the facility use PCBs in research? \_\_\_\_\_

8-31

3. Has the facility had a PCB spill? \_\_\_\_\_

8-24 through  
8-26

4. Does the facility store PCBs or PCB items? \_\_\_\_\_

8-32 through  
8-37

5. Does the facility transport or dispose of items containing PCBs? \_\_\_\_\_

8-38 through  
8-50

(continued)

**Appendix A (continued)**

<b>QUESTION/DESCRIPTION</b>	<b>RESPONSE</b>	<b>REFERENCE (If YES, see checklist items:)</b>
6. Has the facility surveyed its buildings for asbestos?  Which sites tested positive for asbestos? _____	_____	8-51 and 8-52
7. Does the facility have personnel that remove asbestos, perform maintenance work on asbestos covered structures, pipes, or insulation?	_____	8-62 and 8-63
8. Have structures at the facility which contain asbestos undergone, or are currently undergoing, renovation, stripping, or demolition?	_____	8-53 through 8-61
9. Do facility personnel transport or dispose of asbestos-containing waste?	_____	8-64 through 8-67
10. Has the facility conducted a radon survey of its buildings?	_____	8-68 through 8-70
11. Has the facility received any noise complaints?	_____	8-71

**Section 9. Underground Storage Tank (UST) Management**

1. Does the facility have any USTs in the process of being replaced or upgraded?  How many and what are their contents? _____ _____	_____	9-5
2. Has the facility installed any new USTs (after May 1986)?  How many and what are their contents? _____ _____	_____	9-5 through 9-10 and 9-16 through 9-20
3. Have any of the facility USTs been closed?  How many? _____	_____	9-31 through 9-37
4. Have any of the facility USTs undergone a change in service?  How many? _____	_____	9-31 through 9-37

(continued)

Appendix A (continued)

**QUESTION/DESCRIPTION**

**RESPONSE**

**REFERENCE  
(If YES, see  
checklist  
items:)**

**Section 10. Wastewater Management**

1. Does the facility have any potential sources discharging to the environment? (circle the applicable)

\_\_\_\_\_

10-2 and 10-5

wastewater treatment plant  
oil/water separator  
washrack  
septic system

2. Does the facility have a NPDES/SPDES permit?

\_\_\_\_\_

10-5 through  
10-10

3. Does the facility discharge to a local wastewater treatment plant? (circle the appropriate sources of discharge)

\_\_\_\_\_

10-12  
through 10-21

domestic sewage  
wastewater treatment plant  
oil/water separator  
washrack

4. Has the facility had any pretreatment standards imposed upon it by the local wastewater treatment plant?

\_\_\_\_\_

10-2

5. Does the facility operate a feedlot?

\_\_\_\_\_

10-22

6. Does the facility do the land application of sludge?

\_\_\_\_\_

10-23  
through 10-49

7. Does the facility do land disposal of sludge?

\_\_\_\_\_

10-50  
through 10-62

8. Does the facility incinerate sludge?

\_\_\_\_\_

10-63  
through 10-70

Signature of individual completing this form: \_\_\_\_\_

Date completed: \_\_\_\_\_

(continued)

Appendix A (continued)

(continued)

## Appendix A (continued)

### Pollution Control Records

ATTENTION: The following records should be available for review by the audit team either prior to the audit or immediately upon arrival at the facility.

(NOTE: Not all facilities will have, or are even required to have, all of the following.)

#### **General**

1. Copies of NOVs issued to the facility in any of these areas and a site map.

#### **Air Emissions Management**

1. Air emissions inventory.
2. All air related permits.
3. A list of steam generating units and boilers and their size, fuel used, and locations.

#### **Drinking Water Management**

1. Copies of drinking water test results.
2. Copies of reports to the state.
3. Permit
4. Operator certification

#### **Hazardous Materials Management**

1. A list of hazardous material storage/use areas.
2. A waste minimization plan.
3. MSDSs.
4. Documentation of personnel training.
5. The Oil and Hazardous Substances Pollution Contingency (OHSPC) Plan.
6. A copy of any reports of spills.
7. Copies of the Tier I or Tier II reports.
8. Documentation on contaminated sites.

#### **Hazardous Waste Management**

1. The Hazardous Waste Management Plan.
2. A list of hazardous wastes generated at the facility.
3. A list of waste generation/storage areas.
4. USEPA identification number.
5. Manifests.
6. Any permits.
7. The biennial report.
8. Personnel training records.

(continued)

## Appendix A (continued)

### **Pesticides Management**

1. The Pesticide Management Plan.
2. A list of pesticide storage sites.
3. Application records.
4. MSDSs for pesticides.
5. Personnel Certifications for applicators.
6. Contracts for pesticide application.

### **POL Management**

1. The SPCC plan.
2. A list of POL storage areas.

### **Solid Waste Management**

1. Any contracts with waste haulers.
2. Any recycling plans.
3. All documentation pertaining to landfill operation or closure.
4. Records on groundwater sampling resulting from monitoring wells.

### **Special Pollutants Management**

1. The PCB inventory.
2. The PCB annual report.
3. The results of the asbestos survey.
4. The Asbestos Management Plan.
5. Noise complaints.
6. Radon survey results.

### **Underground Storage Tank (USTs) Management**

1. Upgrading and/or closure plans.
2. A list of all USTs and their locations.
3. Release detection documentation.
4. Integrity test results.
5. Site contamination reports after tank removals.

### **Wastewater Management**

1. All NPDES/SPDES permits.
2. Maps of the storm, sanitary, and industrial sewers.
3. A copy of pretreatment standards imposed on the facility.
4. A list of maintenance shops/operations to include wash facilities.
5. Locations of holding ponds, sedimentation pits, and open/end of-pipe discharge points.

## Appendix B

Major Activities at FWS Facilities and Their Related Sections			
Facilities	Sections		
	1 Air Emissions Management	2 Drinking Water Management	3 Hazardous Materials Management
1. Incinerators	•		
2. Heat/Power Production	•		
3. Fuel Storage	•		•
4. Sanitary Wastewater		•	
5. Stormwater Runoff			
6. Sludge Disposal			
7. POL Dispensing	•		
8. Wastewater Treatment			
9. Vehicle Maintenance	•		•
10. Shop Activities	•		•
11. Solid Waste Generation	•		•
12. Water Supply		•	•
13. Hazardous Materials Use		•	•
14. Firefighting Training	•		•
15. PCB Electrical Equipment			
16. Pesticide/Herbicide Use			•
17. Environmental Noise			
18. Emergency Planning			•
19. Asbestos Removal			
20. Underground Storage Tanks			
21. Remodeling Activities			
22. Construction Activities	•		•
23. Soil Removal	•		
24. Laboratories		•	•
25. Unexploded Ordnance			•
26. Medical Waste			•
27. Livestock Management	•		

(continued)

**Appendix B (continued)**

<b>Major Activities at FWS Facilities and Their Related Sections</b>			
<b>Facilities</b>	<b>Sections</b>		
	<b>4 Hazardous Waste Management</b>	<b>5 Pesticide Management</b>	<b>6 POL Management</b>
1. Incinerators	•		
2. Heat/Power Production			•
3. Fuel Storage			•
4. Sanitary Wastewater		•	
5. Stormwater Runoff			
6. Sludge Disposal	•		
7. POL Dispensing			•
8. Wastewater Treatment	•		
9. Vehicle Maintenance	•		•
10. Shop Activities	•		•
11. Solid Waste Generation			
12. Water Supply			
13. Hazardous Materials Use		•	
14. Firefighting Training			•
15. PCB Electrical Equipment			
16. Pesticide/Herbicide Use		•	
17. Environmental Noise			
18. Emergency Planning	•	•	•
19. Asbestos Removal			
20. Underground Storage Tanks			
21. Remodeling Activities			
22. Construction Activities			
23. Soil Removal			
24. Laboratories	•	•	•
25. Unexploded Ordnance	•		
26. Medical Waste			
27. Livestock Management		•	

(continued)



**Appendix B (continued)**

<b>Major Activities at FWS Facilities and Their Related Sections</b>				
<b>Facilities</b>	<b>Sections</b>			
	<b>7 Solid Waste Management</b>	<b>8 Special Pollutants Management</b>	<b>9 UST Management</b>	<b>10 Wastewater Management</b>
1. Incinerators	•			
2. Heat/Power Production	•			•
3. Fuel Storage			•	
4. Sanitary Wastewater				•
5. Stormwater Runoff				•
6. Sludge Disposal	•			•
7. POL Dispensing			•	
8. Wastewater Treatment	•			•
9. Vehicle Maintenance	•		•	•
10. Shop Activities	•		•	•
11. Solid Waste Generation	•			
12. Water Supply				
13. Hazardous Materials Use				
14. Firefighting Training			•	•
15. PCB Electrical Equipment		•		
16. Pesticide/Herbicide Use				•
17. Environmental Noise		•		
18. Emergency Planning				
19. Asbestos Removal		•		
20. Underground Storage Tanks			•	
21. Remodeling Activities		•		
22. Construction Activities				
23. Soil Removal				
24. Laboratories	•			•
25. Unexploded Ordnance	•			
26. Medical Waste	•			
27. Livestock Management	•			•



## **Appendix C**

### **Organization of Environmental Records**

In order to facilitate environmental compliance audits and management of environmental information it is important to organize pertinent paperwork in a manner that is clear, concise, and helpful. The following are suggestions for organizing files affiliated with environmental compliance issues. These topics are not hard and fast, just suggestions to be adapted to a facilities particular operations, and will enable the auditors/regulators to quickly review the necessary information.

#### **Drinking Water Management**

Correspondence/NOVs (includes all correspondence with state or local authorities other than routine submissions of sampling data and any notices of violation).

Inspections (copies of any and all inspection results by the EPA, state/local, and FWS investigation).

Maintenance and repair (includes all receipt, data, schematics etc. of any repair or maintenance work).

Operations (includes logs of water treatment done by the FWS facility staff).

Permit and certification (includes a copy of any permit or authorization to operate a drinking water system, including a copy of the permit application and any water treatment plant operator certifications that are required).

Reports (includes copies of all reports submitted to the state/local authorities on sampling results).

Sampling results (includes the results of all samples analysis, chemical and biological).

Well logs for all active wells (including casing, pump, screen information).

Well closure (create a separate file folder for every well that is closed on the facility).

#### **Hazardous Waste Management**

Correspondence/NOVs (includes all correspondence with state or local authorities other than routine submissions of sampling data and any notices of violation).

EPA Identification Number (include the paperwork assigning the facility its EPA Identification Number and hazardous waste generation status).

Inspections (copies of any and all inspection results by the EPA, state/local, and FWS investigation).

(continued)

### Appendix C (continued)

Manifests (copies of any and all manifests for hazardous waste).

Training (documentation of training).

#### **Pesticides Management**

Application contract.

Application records (what was applied where, when, and by whom).

Correspondence/NOVs (includes all correspondence with state or local authorities other than routine submissions of sampling data and any notices of violation).

Permits/Certification (copies of all permits and the applicator certifications).

Personnel (include training records and health monitoring records).

**Storage Tank Management** (every separate aboveground storage tank should have a separate set of files)

Correspondence/NOVs (includes all correspondence with state or local authorities other than routine submissions of sampling data and any notices of violation).

Closure records, including history of removal of USTs.

Maintenance and repair (includes all receipts, data, schematics etc., of any repair or maintenance work).

Operations (includes logs of visual inspections, capacity reconciliation records, results of tank tightness inspections or pipeline testing).

Registration (includes a copy of the application for registration and the state registration).

#### **Wastewater Management**

Correspondence/NOVs (includes all correspondence with state or local authorities other than routine submissions of sampling data and any notices of violation).

Maintenance and Repair (includes all receipts, data, schematics etc., of any repair or maintenance work on the wastewater treatment works, septic system, or oil/water separators).

Operations (includes logs of activities done to treat the wastewaters).

(continued)

### **Appendix C (continued)**

Permit and Certification (includes a copy of any permit or authorization to operate a wastewater treatment system or septic system, including a copy of the permit application and any water treatment plant operator certifications that are required. If the facility has more than one permit related to wastewater - keep them in separate files).

Pretreatment standards (copy of any pretreatment standards imposed upon the facility by the state/local governments).

Reports (includes copies of all reports submitted to the state/local authorities on sampling results).

Sampling results (includes the results of all samples analysis).

#### **The following are additional files that might be helpful to keep:**

Air emissions sources (if you have an air emissions sources that requires emissions testing, create a file for the source include the test data, potential sources requiring emissions testing are incinerators and boiler).

CFC/halons (certification, purchase receipts, records for the quantity of CFCs and halons that were recycled or disposed of.

Chemical Hygiene Plan and training documentation.

Community Right-to-Know (EPCRA) Reports.

Disposal contracts (copy of contracts for pick up and disposal of trash, recyclable, hazardous waste).

Hazardous Communication Program and training documentation.

Material safety data sheets (MSDSs).

Oil/water separators (a separate file for each separator with documentation of its design and when it was last cleaned out).

Open Burning (include any plans, permits, letters of approval, log of burning operations).

Pollution Prevention Plan.

Recycling (includes documentation of quantities of materials being recycled).

Spill Prevention Control and Countermeasure (SPCC) Plan.

Spills/releases (any reports, documentation of spills or releases of any substances).

Used oil (records of the quantity and final disposal site for waste petroleum products, including products that are recycled).



## **Appendix D**

### **FWS Environmental Compliance Audit Program (ECAP) Inbrief**

#### **Purpose**

The purpose of this audit is to:

- Identify areas of potential and actual environmental noncompliance that need to be addressed before they are identified by a regulatory agency.
- Establish a FWS-wide standards for environmental compliance audits as a means of ensuring the Services's observance of all applicable environmental laws and regulations
- Assure Regional Directors and environmental program managers that environmental programs are effectively addressing environmental problems that could
  - a. impact FWS mission effectiveness
  - b. jeopardize the health of Service personnel or the general public
  - c. significantly degrade the environment
  - d. expose the FWS to avoidable financial liabilities as a result of noncompliance with environmental requirements
  - e. erode public confidence in the FWS and the U.S. Department of the Interior (DOI)
  - f. expose individuals to civil and criminal liability
- Secure information that will permit FWS Managers to anticipate and prevent future environmental problems
- Provide data for use in identifying, validating, prioritizing, programing, and budgeting environmental requirements.

#### **Scope of the Audit**

This audit will cover FWS facilities and activities. It will not address the facilities or activities of tenants occupying FWS property. FWS facilities are divided into primary and secondary facilities. A secondary facility might be a temporary field station or a remote refuge site with one building on the land and no maintenance activities. Only primary sites will be assessed in the audit.

The audit incorporates both a review of paperwork and a physical review of paperwork and structures.

#### **Topics for audit**

Air Emissions Management  
Drinking Water Quality  
Hazardous Materials Management  
Hazardous Waste Management  
Pesticide Management  
Petroleum, Oil, and Lubricants(POL) Management  
Solid Waste Management  
Special Pollutants Management (includes asbestos, PCBs, radon, and noise)  
Underground Storage Tanks(UST) Management  
Wastewater Management

(continued)

## Appendix D (continued)

### **Audit Results**

Each site audit will result in the creation of "finding sheets" which document both the positive and the negative situations identified at the facility. A copy of all finding sheets will be left at the assessed facility.

### **Scoring of Findings**

**Significant:** A problem categorized as significant requires immediate attention. It poses, or has a high likelihood to pose, a direct and immediate threat to human health, safety, the environment, or the facilities' mission. A leaking PCB transformer that is located next to a dining facility, for example, would likely be a significant deficiency.

**Major:** A major deficiency requires action, but not necessarily immediate action. Major deficiencies may pose a threat to human health, safety, or the environment. Any immediate threat, however, must be categorized as significant.

**Minor:** Minor deficiencies are usually administrative in nature, even though those findings might possibly result in a notice of violation. This category may also include temporary or occasional instances of noncompliance.

**Management Practice:** Management practice items are those for which there is no specific regulatory requirement.

A finding may be positive or negative. A positive finding is for a job, activity, or person who has gone above and beyond the regulatory requirements for protecting the environment. A negative finding is when there is an issue of noncompliance or a poor management practice.

### **After the Audit**

1. The audit team will send a copy of the Draft findings report to the regional representative who will forward it on to the facility and another copy is sent to the SPCO.
2. Upon receipt of the report, the facility is required to respond to each of the regulatory findings. A response can be as simple as "situation corrected on 30 June 1994," "work order request submitted on 30 May 1994 for construction of cement pad," The facility is required to develop a corrective action for every regulatory finding. The facility is not required to respond to the management practice findings in Section Four of the report but it is strongly urged to do so. If the facility has received a "Significant" finding, this finding will be forwarded to the Directorate level. Replies to the findings will be sent to the Region within 60 days after receipt of the Draft findings Report. If a reply/corrective action is not appropriate to the finding, the audit team will contact the Region who in turn will contact the facility and develop an alternative plan. The region is impose a deadline for receipt of responses.
3. The audit team will produce a final report. Three copies of the final report will be sent to the SPCO which will forward a copy to the facility and the responsible Region.



Appendix E  
FINDING SUMMARY

Handbook Edition Date: July 1995

Facility Name: Smiths NWR

Section (Air, etc.): Haz. Waste Question Number: 4-31 Bldg # / Location paint shed

Type of Finding (Pos/Neg): neg Section Code: 9Z Universal Code: HW2

FINDING CATEGORY (circle one): Significant Major Minor Management Practice

Basis of finding (Citation or Regulation): 40 CFR 262.34(d)(2) and 265.171

Is this a repeat finding (NOV, etc.)? No

**CONDITION** (What did you find?)

5 of the 8 drums of hazardous waste stored in the paint shed were rusted  
and bulging.

**CRITERIA** (Enter Checklist Item Number) 4-31

**SUGGESTED SOLUTION(S):**

Overpack the rusted and bulging drums in containers that are free of  
rust or other damage.

**COMMENTS:**

This is an issue that should be inspected during regular storage area inspections.  
The facility manager had ordered overpack drums before the audit team left the  
facility.

PREPARED BY: Larry S. Hall

DATE: July 25 1995

(continued)

## Appendix E (continued)

### **Explanation of Finding Categories**

Deficiencies noted on the Finding Summary are rated as follows:

**Significant:** A problem categorized as significant requires immediate attention. It poses, or has a high likelihood to pose, a direct and immediate threat to human health, safety, the environment, or the facilities' mission. A leaking PCB Transformer that is located next to a dining facility, for example, would likely be a significant deficiency.

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**Minor:** Minor deficiencies are usually administrative in nature, even though those findings might possibly result in a notice of violation. This category may also include temporary or occasional instances of noncompliance.

**Management Practice:** Management practice items are those for which there is no specific regulatory requirement.

A finding may be positive or negative. A positive finding is for a job, activity, or person who has gone above and beyond the regulatory requirements for protecting the environment. A negative finding is when there is an issue of noncompliance or a poor management practice.

Findings based on FWS or DOI manuals will only be ranked a minor.

(continued)

**Appendix E (continued)**

**FINDING SUMMARY**

Handbook Edition Date: \_\_\_\_\_

Facility Name: \_\_\_\_\_

Section (Air, etc.): \_\_\_\_\_ Question Number: \_\_\_\_\_ Bldg # / Location \_\_\_\_\_

Type of Finding (Pos/Neg): \_\_\_\_\_ Section Code: \_\_\_\_\_ Universal Code: \_\_\_\_\_

**FINDING CATEGORY** (*circle one*):    Significant    Major    Minor    Management Practice

Basis of finding (Citation or Regulation): \_\_\_\_\_  
\_\_\_\_\_

Is this a repeat finding (NOV, etc.)? \_\_\_\_\_

**CONDITION** (What did you find?)

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**CRITERIA** (Enter Checklist Item Number) \_\_\_\_\_

**SUGGESTED SOLUTION(S):**

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**COMMENTS:**

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**PREPARED BY:** \_\_\_\_\_

**DATE:** \_\_\_\_\_

(continued)

Appendix E (continued)

**Explanation of Finding Categories**

Deficiencies noted on the Finding Summary are rated as follows:

**Significant:** A problem categorized as significant requires immediate attention. It poses, or has a high likelihood to pose, a direct and immediate threat to human health, safety, the environment, or the facilities' mission. A leaking PCB Transformer that is located next to a dining facility, for example, would likely be a significant deficiency.

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Findings based on FWS or DOI manuals will only be ranked a minor.

(continued)

## Appendix E (continued)

### **FWS Environmental Compliance Audit Findings Root Causes**

#### **Purpose**

The purpose for using root cause codes is to better enable the SPCO to track trends in noncompliance.

<b>Universal Codes</b> <b>(Pick a maximum of two)</b>			
<b>Code</b>		<b>Code</b>	
1Z	Labels/Markings	7Z	Certifications/Licenses
2Z	Recordkeeping	8Z	Training
3Z	Reports	9Z	Operational Practice
4Z	Plans	10Z	Inadequate Facility
5Z	Surveys/Inventories/Testing	11Z	Spills/Leaks
6Z	Permits	12Z	Other

(continued)

**Appendix E (continued)**

Section Codes (Pick a maximum of two)			
Code		Code	
A1 A2 A3 A4 A5 A6	Air Emissions Management - Fuel Burners - Incinerators - Open Burning - CFCs/Halons - Fugitive Emissions - Other	PO1 PO2 PO3 PO4 PO5	POL Management - Drum storage - ASTs - Pipelines - Used Oil - Other
D1 D2 D3 D4 D5 D6	Drinking Water Management - Public Water Systems - Community Water Systems - Noncommunity Water systems - Wells - State Classifications other than Federal Classifications - Other	SW1 SW2 SW3 SW4 SW5 SW6 SW7 SW8	Solid Waste Management - Operating Open Dump - Old Dump/landfill site - Operating Landfill - Receptacles - Recycling - Medical Waste - Regulated Materials - Other
HM1 HM2 HM3 HM4 HM5 HM6	Hazardous Materials Management - General Hazardous Materials - Laboratories - EPCRA - Flammables/Combustibles - Compressed gases - Other	SP1 SP2 SP3  SP4 SP5 SP6	Special Pollutants - PCB Transformers - PCB Items - Demolition/Renovation: Asbestos - Disposal - Radon - Other
HW1 HW2 HW3 HW4 HW5 HW6 HW7	Hazardous Waste Management - CESQG - SQG - Generator - Uncharacterized Waste - Satellite Accumulation Points - TSDF - Other	U1 U2 U3 U4 U5	Underground Storage Tanks - Substandard tanks - Upgraded tanks - Closed Tanks - Release Detection - Other
P1 P2 P3 P4 P5 P6	Pesticide Management - Applications - Applicators - Restricted Use Pesticides - Storage - Mixing/Preparation - Other	W1  W2 W3 W4 W5 W6 W7	Wastewater Management - Discharge to Treatment Works - Treatment Works operation - Stormwater Discharge - Oil/Water Separators - Washracks - Individual Sewage Systems - Other

**Appendix F**

**SUMMARY OF FINDINGS**

<b>Topic</b>	<b>Significant</b>	<b>Major</b>	<b>Minor</b>	<b>Negative Management Practice</b>	<b>Positive Findings</b>
Air Emissions Management					
Drinking Water Quality					
Hazardous Materials Management					
Hazardous Waste Management					
Pesticide Management					
Petroleum, Oil, and Lubricant (POL) Management					
Solid Waste Management					
Special Pollutants Management (PCBs, Asbestos, Radon, and Noise)					
Underground Storage Tank Management					
Wastewater Management					
<b>TOTALS</b>					





## Appendix G

### Acronyms and Abbreviations

AAR	annual application rate
ACM	asbestos-containing material
ANSI	American National Standards Institute
API	American Petroleum Institute
AQCR	Air Quality Control Region
ARI	Air Conditioning and Refrigeration Institute
ASME	American Society of Mechanical Engineers
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
BAT	best available technology
Btu	British thermal unit
C	compliance
CAA	<i>Clean Air Act</i>
CAMU	Corrective Action Management Unit
CAP	Corrective Action Plan
CAS	Chemical Abstract Service
CEMS	Continuous Emissions Monitoring System
CEQ	Council on Environmental Quality
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act</i>
CESQG	conditionally exempt small quantity generator
CFC	chlorofluorocarbons
CFR	Code of Federal Regulations
CT	residual disinfectant concentration (C in CT calculation)
CWA	<i>Clean Water Act</i>
DHMIR	detailed hazardous materials incident report
DIY	do-it-yourself
DOI	Department of the Interior
DOT	Department of Transportation
EE/CA	engineering evaluation/cost analysis
EIS	environmental impact statement
EO	Executive Order

(continued)

EPA	Environmental Protection Agency
EPCRA	<i>Emergency Planning and Community Right-to-Know Act</i>
ESA	<i>Endangered Species Act</i>
FFCA	<i>Federal Facilities Compliance Act</i>
FIFRA	<i>Federal Insecticide, Fungicide, and Rodenticide Act</i>
FOTW	Federally owned treatment works
FNSI	finding of no significant impact
FR	Federal Register
FUDS	formally used defense sites
FWCA	<i>Fish and Wildlife Conservation Act</i>
FWS	Fish and Wildlife Service
FY	fiscal year
GOTP	gamma glutamyl transpeptidase
HCFC	hydrogenated chlorofluorocarbons
HCL	hydrochloric acid
HOC	halogenated organic compounds
HPC	heterotrophic plate count
HTRW	hazardous, toxic, and radioactive waste
ID	identification
IOPP	International Oil Pollution Prevention
LDR	land disposal restriction
LPG	liquid petroleum gas
MBtu	Million British thermal units
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MDL	maximum detection level
MOU	memorandum of understanding
MP	management practice
MPN	most probable number
MSDS	material safety data sheet
MSWLF	municipal solid waste landfill
MVAC	motor vehicle air conditioning
MWC	municipal waste combustor
NA	not applicable
NAAQS	National Ambient Air Quality Standards
NACE	National Association of Corrosion Engineers

(continued)

NEPA	<i>National Environmental Policy Act</i>
NFPA	National Fire Protection Association
NHPA	<i>National Historic Preservation Act</i>
NIOSH	National Institute of Occupational Safety and Health
NLS	noxious liquid substance
NOI	notice of intent
NOV	notice of violation
NPDES	National Pollutant Discharge Elimination System
NRC	National Response Center
NSPS	new source performance standards
NTNC	nontransient noncommunity
O&M	operations and maintenance
ODA	<i>Ocean Dumping Act</i>
OHSPC	Oil and Hazardous Substances Pollution Contingency Plan
OMB	Office of Management and Budget
OPA	<i>Oil Pollution Act</i>
OSC	On-Scene Coordinator
OSHA	<i>Occupational Safety and Health Act</i>
PCB	polychlorinated biphenyl
PL	Public Law
POC	point of contact
POHC	principle organic hazardous constituent
POL	petroleum, oil, and lubricant
POTW	publicly owned treatment works
PSD	prevention of significant deterioration
PSES	pretreatment standards for existing sources
PSNS	pretreatment standards for new indirect sources
QA	quality assurance
RACM	regulated asbestos-containing material
RCRA	<i>Resource Conservation and Recovery Act</i>
RMA	requires management action
RQ	reportable quantity
RSPA	Research and Special Programs Administration

(continued)

SARA	<i>Superfund Amendments and Reauthorization Act</i>
SDWA	<i>Safe Drinking Water Act</i>
SGOT	serum glutamic oxaloacetic transaminase
SGPT	serum glutamic pyuvic transaminase
SIP	State Implementation Plan
SOI	Secretary of the Interior
SOP	standard operating procedure
SOUR	specific oxygen uptake rate
SPCC	Spill Prevention Control and Countermeasure Plan
SPCO	Service Pollution Control Office
SPDES	State Pollution Discharge Elimination System
SQG	small quantity generator
STP	sewage treatment plant
SWMU	solid waste management unit
TCLP	toxicity characteristics leaching procedure
THM	trihalomethanes
TSS	total suspended soilid
TTHM	total trihalomethanes
TNT	ammonia nitrate explosive
TPQ	threshold planning quantity
TTO	total toxic organics
TSCA	<i>Toxic Substances Control Act</i>
TSDF	treatment, storage, or disposal facility
TU	temporary unit
UIC	underground injection control
UL	Underwriter's Laboratory
USACERL	U.S. Army Construction Engineering Research Laboratories
USC	U.S. Code
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VHAP	volatile hazardous air pollutant
VOC	volatile organic compound
VOL	volatile organic liquid

(continued)

## Appendix G (continued)

### Commonly Used Abbreviations

bbl	barrel	µg	microgram
C	Celsius	µm	micrometer
cm	centimeter	min	minute
cm <sup>2</sup>	square centimeter	MJ	Megajoule
F	Fahrenheit	mo	month
ft	foot	mm	millimeter
ft <sup>2</sup>	square feet	mrem	millirem
ft <sup>3</sup>	cubic feet	MW	Megawatt
g	gram	ng	nanogram
gal	gallon	NTU	nephelometric turbidity unit
gJ	gigajoule	oz	ounce
h	hour	pCi	picoCurie
hp	horsepower	ppm (v/w)	part per million (by volume/ weight)
in.	inch	psi	pound per square inch
J	Joule	psia	pounds per square inch absolute
kg	kilogram	psig	pounds per square inch gauge
km	kilometer	s	second
kPa	kilopascals	scf	standard cubic foot
L	liter	scm	standard cubic meter
lb	pound	V	volt
m	meter	yd	yard
m <sup>3</sup>	cubic meter	yd <sup>2</sup>	square yard
mg	milligram	yr	year
mi	mile		

### **Chemicals**

CO	carbon monoxide	NO <sub>2</sub>	nitrogen dioxide
CO <sub>2</sub>	carbon dioxide	NO <sub>x</sub>	nitrogen oxides
Hg	mercury	SO <sub>2</sub>	sulfur dioxide



## Appendix H

### Hotline and USEPA Contacts

#### Region 1 (CT, ME, MA, NH, RI, VT)

Environmental Protection Agency  
John F. Kennedy Federal Bldg.  
Room 2203  
Boston, MA 022-3  
(617) 565-3715

#### Region 6 (AK, LA, NM, OK, TX)

Environmental Protection Agency  
First Interstate Bank Tower at Fountain  
Place  
1445 Ross Ave, Suite 1200  
Dallas, TX 75202  
(214) 655-2100

#### Region 2 (NJ, NY, Puerto Rico, Virgin Islands)

Environmental Protection Agency  
26 Federal Plaza, Room 906  
New York, NY 10278  
(212) 264-2525

#### Region 7 (IA, KS, MO, NB)

Environmental Protection Agency  
726 Minnesota Ave  
Kansas City, MO 66401  
(913) 551-7006

#### Region 3 (DC, DE, MD, PA, VA, WV)

Environmental Protection Agency  
841 Chestnut St.  
Philadelphia, PA  
(215) 597-9800

#### Region 8 (CO, MT, ND, SD, UT, WY)

Environmental Protection Agency  
999 18th St, Suite 500  
Denver, CO 80202  
(303) 293-1603

#### Region 4 (AL, FL, GA, KY, MS, MC, SC, TN)

Environmental Protection Agency  
345 Courtland St. N.E.  
Atlanta, GA 30365  
(404) 347-4727

#### Region 9 (AZ, CA, HI, NV, American Samoa, Guam, Trust Territories of the Pacific)

Environmental Protection Agency  
75 Hawthorne St.  
San Francisco, CA 94105  
(415) 556-6322

#### Region 5 (IL, IN, MI, MN, OH, WI)

Environmental Protection Agency  
230 S. Dearborn St  
Chicago, IL 60604  
(312) 353-2000

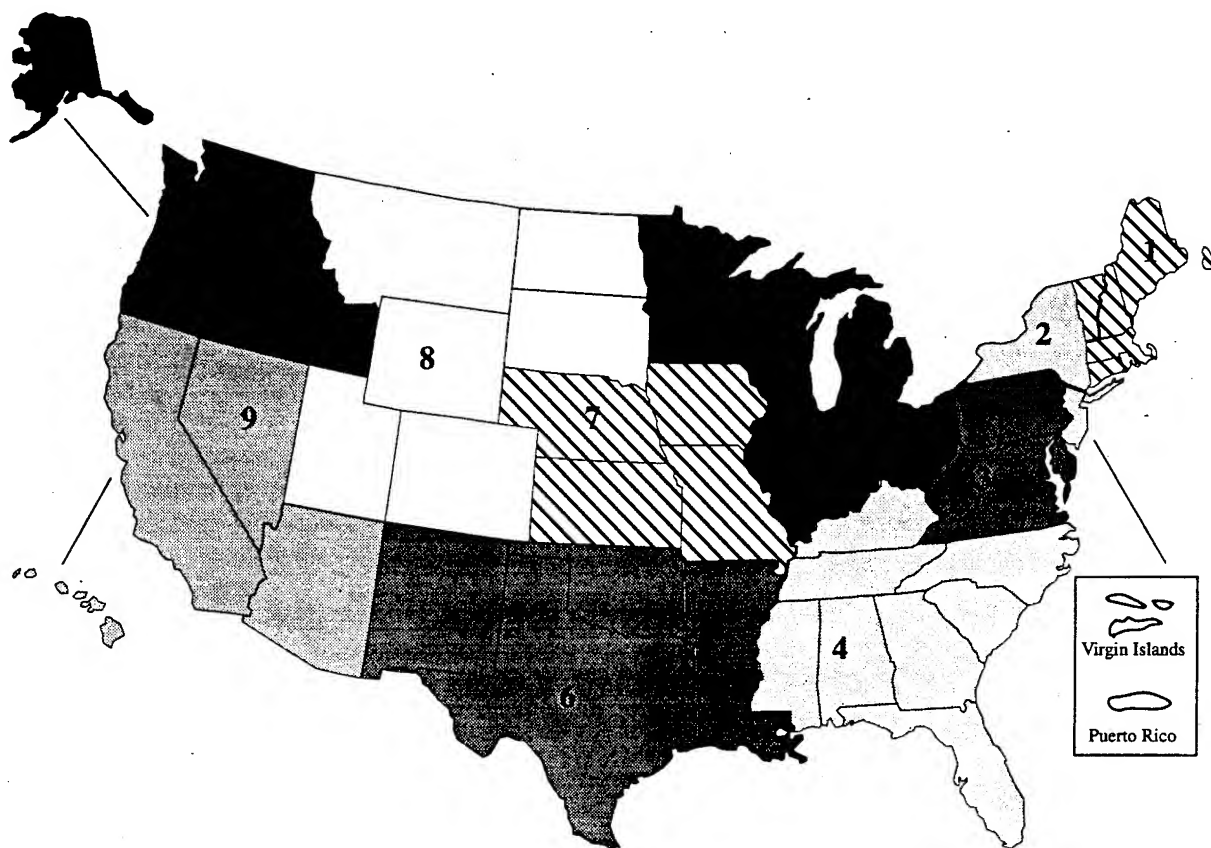
#### Region 10 (AK, ID, OR, WA)

Environmental Protection Agency  
1200 Sixth Ave  
Seattle, WA 98101  
(206) 402-5810

(continued)

Appendix H (continued)

USEPA REGION MAP



(continued)



Appendix H (continued)

ENVIRONMENTAL INFORMATION HOTLINES

- Air Risk Hotline** 919-541-0888  
Information on health, exposure, and risk assessment with regard to toxic air pollutants.
- Bureau of Explosives Hotline** 202-639-2222  
Offers assistance in hazardous materials incidents involving railroads and is often contacted through CHEMTREC.
- Cancer Information Service Hotline** 800-422-6237  
Provides information on cancer risk and referrals to proper sources for local support services.
- CHEMTREC Hotline** 800-424-9300  
The Chemical Transportation Emergency Center will identify unknown chemicals, advise on response methods and procedures for chemicals and situations, provide help in contacting shippers/carriers/manufacturers/product response teams.
- Consumer Product Safety Commission** 800-638-2772  
Information on consumer safety and guidelines on what to do if you come in contact with formaldehyde, asbestos, lime, and air pollutants. Also provides product recall information.
- Control Technology Center for Air Toxics** 919-541-0800  
Provides information to state and local pollution control agencies or sources of emissions of air toxics.
- Department of Transportation Hotline** 202-366-4488  
Information assistance pertaining to Federal regulations for transportation of hazardous materials, CFR 49.
- Emergency Plan and Community Right-To-Know Hotline, EPA** 800-535-0202  
EPA Title III requirements information.
- Environmental Defense Fund Recycling Hotline** 212-505-2100  
Recycling information and locations.
- Environmental Protection Agency** 900-245-4505  
Agency for vendors treating groundwater, soil, sludge, sediments, and solid waste.
- Florida Center for Solid & Hazardous Waste Management** 800-348-1239  
An electronic bulletin board for recyclers.
- Florida Leak Reporting Hotline** 904-488-3935  
For timely reporting of release of petroleum products into the soil (72 h).
- National Pesticide Telecommunications Network Hotline** 800-858-7378  
Information regarding all aspects of pesticide handling.
- National Response Center** 800-424-8802  
Spill response reporting

(continued)

Appendix H (continued)

Environmental Information Hotlines (continued)

<b>Plastics Recyclers Information Line</b>	800-243-5790
Information regarding plastic recycling locations according to area.	
<b>Poison Control Center (National Capital)</b>	202-626-3333
Provides info on exposure to chemicals, poisons, or drugs.	
<b>Public Information Hotline, USEPA</b>	202-260-2080
Will answer inquiries from the public about USEPA and offers a variety of general, non-technical information materials.	
<b>RCRA/Superfund, USEPA</b>	800-231-3075
Right-to-know information for California, Arizona, Hawaii, and Nevada.	
<b>RCRA/Superfund/UST Hotline</b>	800-424-9346
Answers questions concerning RCRA, Superfund, USTs, and hazardous waste.	
<b>Safe Drinking Water Hotline</b>	800-426-4791
Information on policy and regulations regarding public water supply programs.	
<b>Small Business and Asbestos Ombudsman's Office, USEPA</b>	800-368-5888
Information on pollution prevention and recycling.	
<b>Stratosphere Ozone Hotline, USEPA</b>	800-296-1996
Information on ozone protection regs and requirements under Title VI of the <i>Clean Air Act</i> Amendments of 1990 and other general aspects of stratosphere ozone depletion/protection.	
<b>Superfund Site Cleanup</b>	800-533-3508
For questions on status of Superfund sites within Region VI	
<b>Superfund Technical Information</b>	800-346-5009
Superfund message center allowing caller to leave messages	
<b>Toxic Substances (Asbestos)</b>	800-462-6706
Information on funding for asbestos cleanup projects.	
<b>Toxic Substance Control Act (TSCA) Hotline</b>	202-554-1404
Information on TSCA and Asbestos Technical Information and Referral	
<b>Hazardous Materials and Oil Spills, USEPA</b>	800-424-8802
National Response Center in the advent of hazardous materials spills	
<b>Waste Reduction Assistance Program OER (FL)</b>	904-488-0300
Advice, information, and counseling services for pollution prevention.	
<b>Wetlands Protection Hotline, USEPA</b>	800-832-7828
Information regarding values of wetlands and efforts for wetlands protection.	
<b>Whistle Blower Hotline, USEPA</b>	800-424-4000
Allows for reporting of fraud, waste, and abuse in USEPA programs.	

## **SECTION 1**

### **Air Emissions Management**

A. Applicability	1
B. Federal Legislation	1
C. State and Local Regulations	2
D. FWS/DOI Manuals	3
E. Key Compliance Requirements	3
F. Key Compliance Definitions	4
Guidance for Checklist Users	13

**The contents of this section are the minimum requirements the auditor must review. The auditor must also review applicable state and local regulations.**

## SECTION 1

### AIR EMISSIONS MANAGEMENT

#### A. Applicability

This section includes regulations, responsibilities, and compliance requirements associated with air pollution emissions from stationary and mobile sources. The significant types and sources of air pollution emissions include:

- Particulates, SO<sub>2</sub>, NO<sub>x</sub>, VOC, hazardous air pollutants (HAP), and CO from fuel burning at steam and hot water generation plants and boilers.
- Particulates and toxic air emissions from the operation of hazardous waste, general waste, classified material, and medical, pathological, and/or infectious waste incinerators.
- Particulates, CO, metals, and toxic air pollutant emissions from open burning and open detonation operations.
- The emission of volatile organic compound (VOC) vapors from the storage and transfer of certain petroleum fuels and chemicals (solvents), and the operation of degreasers and other processes (paint stripping and metal finishing) that use solvents.
- The emission of CO from vehicles and equipment operated on the facility.
- Fugitive particulate emissions from training activities and construction/demolition operations.

Most facilities have air emissions sources in one or more of these categories. Therefore this section is applicable to some extent at all facilities.

#### B. Federal Legislation

- *The Clean Air Act* Amendments of 1990 (CAAA90). This act, Public Law (PL) 101-549 (42 U.S. Code (USC) 7401-7671q), is currently the Federal legislation regulating the prevention and control of air pollution. It is composed of seven major titles that address various aspects of the national air pollution control program:
  1. Title I describes air pollution control requirements for geographic areas in the United States with respect to the National Ambient Air Quality Standards (NAAQS).
  2. Title II deals mostly with revised tailpipe emission standards for motor vehicles. These requirements compel automobile manufacturers to improve design standards to limit CO, hydrocarbon, and NO<sub>x</sub> emissions. Oxygenated gasoline will be required in cities with the worst ozone and CO nonattainment. Reformulated gasoline and gasoline with reduced Reid vapor pressure is used in ozone nonattainment areas.

3. Title III potentially contains the most costly requirement of the CAAA90. The major elements of Title III deal with hazardous air pollutants through control of routine emissions, and contingency planning for accidental releases.
4. Title IV addresses acid deposition control and applies only to commercial utilities that produce electricity for sale.
5. Title V outlines the requirement of having states issue Federally enforceable operating permits to major stationary sources. The permits are designed to enhance the ability of the U.S. Environmental Protection Agency (USEPA), state regulatory agencies, and private citizens to enforce the requirements of the CAAA90. Permits will also be used to specify operation and control requirements for stationary sources.
6. Title VI limits the emissions of chlorofluorocarbons (CFC), halons, and other halogenated chemicals that contribute to the destruction of stratospheric ozone. These requirements closely follow the control strategies recommended in June 1990 by the second meeting of parties to the Montreal Protocol.
7. Title VII describes civil and criminal penalties that may be imposed for violation of new and existing air pollution control requirements. This title also gives authority to the USEPA to issue field citations for many types of violations.

• Federal regulations used to develop the checklist include:

- 40 CFR 60, *Standards of Performance for New Stationary Sources*.
- 40 CFR 61, *National Emission Standards for Hazardous Air Pollutants*.
- 40 CFR 80, *Regulation of Fuels and Fuel Additives*.
- 40 CFR 82, *Protection of Stratospheric Ozone*.

### C. State/Local Regulations

The primary mechanisms regulating air pollutant emissions are the state or air quality control region (AQCR) regulations. These regulations will normally follow the Federal guidelines for state programs and will have many similar features. However, depending on the type and degree of air pollutant problems within the state/region, the individual regulations will vary. As an example, ozone problems are widespread in California and, therefore, the individual AQCRs in that state have stringent VOC emission requirements. The state of North Dakota has no such problem and, therefore, has fewer and less stringent VOC regulations.

New source performance standards (NSPSs) are established for particular pollutants in industrial categories based upon adequately demonstrated control technology. A permit is normally required for new, expanded, or modified sources of air pollutants. These permitted sources could include incinerators, boilers, and open burning activities.

Some state regulations apply directly to some facilities and operations without requiring a permit. At a minimum, state regulations should be reviewed for the following activities:

1. fugitive dust emissions
2. control of particulate emissions from the transportation of refuse or materials in open vehicles
3. certification requirements for boiler operators
4. emissions and emission control requirements for the operation of existing fossil fuel-fired steam generators

5. open burning
6. vehicle exhaust emissions testing
7. spray painting of vehicles, buildings, and/or furniture
8. certification of vehicles transporting VOC liquids
9. paving of roads and parking lots
10. toxic air pollutants
11. operation of cold cleaners, degreasers, and open top vapor degreasers
12. vapor control requirements for fuel pumps.

#### **D. FWS/DOI Manuals**

No applicable manuals final as of the publication of this handbook.

#### **E. Key Compliance Requirements**

- Gasoline Dispensing - Leaded gasoline shall not be introduced into any motor vehicle that is labeled UNLEADED GASOLINE ONLY, or that is equipped with a gasoline tank filler inlet designed for introduction of unleaded gasoline. Fuel pumps are required to display signs stating the type of fuel in each pump and that only unleaded gas can be introduced into labeled vehicles. The nozzles of the pumps are required to be properly sized. Depending on whether the oxygenated gas is still in the control period, or the area has an oxygenated gasoline program with a credit program, pumps dispensing oxygenated gasoline are required to be labeled. During 1992 and later high ozone seasons and regulatory control periods, gasoline shall not be sold, offered for sale, imported, dispensed, supplied, or transported that exceeds Reid vapor pressure standards in Appendix 1-1. No low sulfur diesel fuel shall be distributed, transported, offered for sale, or dispensed for use in motor vehicles unless it is free of the dye 1,4-dialkylamino-antraquinone and has an acetane index of at least 40, or a maximum aromatic content of 35 volume percent and a sulfur percentage of less than 0.05 percent (40 CFR 80.22(a), 80.22(d), 80.22(e), 80.24(a)(1), 80.27(a)(2), 80.35, 80.80(d), and 80.29(a)).
- Chlorofluorocarbons (CFCs) and Halons - To protect the ozone layer, no person repairing or servicing motor vehicles for payment can service a motor vehicle air-conditioner (MVAC) in any way that affects the refrigerant unless they have been trained and certified and are using approved equipment. Additionally, persons who maintain, service, or repair appliances, except MVACs, and persons who dispose of appliances, except for small appliances, room air conditioners, MVACs, and MVAC-like appliances are required to be certified through an approved technician certification program. As of 15 November 1992, no Class I or Class II substances suitable for use in motor vehicles as a refrigerant can be sold or distributed in any container that is less than 20 lb [9.07 kg] to any person unless that person is trained and certified. Facilities that sell Class I or Class II substances suitable for use as a refrigerant in containers of less than 20 lb [9.07 kg] are required to display a sign with certain wording. The servicing of appliances containing CFCs and Halons is required to be done in a manner to prevent emissions (40 CFR 82.34(a), 82.34(b), 82.42(a) through 82.42(c), and 80.150 through 80.166).
- Degreasing Operations - Batch cold cleaning machines, batch vapor cleaning machines, and in-line cleaning machines have to have tightly fitting covers and assorted emission

control devices in or to prevent excess emissions. Operators of these types of units are also required to submit notifications, operating reports, exceedance reports, and solvent use reports. These regulations specifically apply to each individual batch vapor, in-line vapor, in-line cold, and batch cold solvent cleaning machine that uses any solvent containing methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, or chloroform or any combination of these halogenated HAP solvents, in total concentration greater than 5 percent by weight, as a cleaning and/or drying agent.

- **Recordkeeping** - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

## **F. Key Compliance Definitions**

- **Air Blanket** - the layer of air inside the solvent cleaning machine freeboard located above the solvent/air interface. The centerline of the air blanket is equidistant between the sides of the machine (40 CFR 63.461).
- **Annual Capacity Factor** - the ratio between the actual heat input to a steam generating unit from an individual fuel or combustion of fuels during a period of 12 consecutive calendar months and the potential heat input to the steam generating unit from all fuels, had the steam generating unit been operated for 8700 h during that 12 mo period at the maximum design heat input capacity (40 CFR 60.41c).
- **Appliance** - any device which contains and uses a Class I or Class II substance as a refrigerant and which is used for household or commercial purposes, including any air conditioner, refrigerator, chiller, or freezer (40 CFR 82.152(a)).
- **Apprentice** - any person who is currently registered as an apprentice in service, maintenance, repair or disposal of appliances with the U.S. Department of Labor's Bureau of Apprenticeship and Training (or a State Apprenticeship Council recognized by the Bureau of Apprenticeship and Training). If more than 2 yr have elapsed since the person first registered as an apprentice, the person shall not be recognized as an apprentice (40 CFR 82.152(b)).
- **Approved Equipment Testing Organization** - any organization which has applied for and received approval from the Administrator pursuant to 40 CFR 82.160 (40 CFR 82.152(c)).
- **Automated Parts Handling System** - a mechanical device that carries all parts and parts baskets at a controlled speed from the initial loading of soiled or wet parts through the removal of the cleaned or dried parts. Automated parts handling systems include, but are not limited to, hoists and conveyors (40 CFR 63.461).
- **Batch Cleaning Machine** - a solvent cleaning machine in which individual parts or a set of parts move through the entire cleaning cycle before new parts are introduced into the solvent cleaning machine. An open top vapor cleaning machine is a type of batch cleaning machine. A solvent cleaning machine, such as a ferris wheel cleaner, that cleans multiple batch loads simultaneously and is usually loaded is a batch cleaning machine (40 CFR 63.461).

- *Carbon Adsorber* - a bed of activated carbon into which an air solvent gas vapor stream is routed and which adsorbs the solvent on the carbon (40 CFR 63.461).
- *Cartridge Filter* - a discrete filter unit containing both filter paper and activated carbon that traps and removes contaminants from petroleum solvent, together with the piping and ductwork used in installing this device (40 CFR 60.621).
- *Certified Refrigerant Recovery or Recycling Equipment* - equipment certified by an approved equipment testing organization to meet the standards in 40 CFR 82.158(b) or (d), equipment certified pursuant to 40 CFR 82.36(a), or equipment manufactured before 15 November 1993, that meets the standards in 40 CFR 82.158(c), (e), or (g) (40 CFR 82.152(d)).
- *Clean Liquid Solvent* - fresh, unused solvent, recycled solvent, or used solvent that has been cleaned of soils (e.g., skimmed of oils or sludge and strained of metal chips) (40 CFR 63.461).
- *Cleaning Capacity* - for a cleaning machine without a solvent/air interface, the maximum volume of parts that can be cleaned at one time. In most cases, the cleaning capacity is equal to the volume (length time width time height) of the cleaning chamber (40 CFR 63.461).
- *Closed-Vent System* - a system that is not open to the atmosphere and is composed of piping, connections, and, if necessary, flow inducing devices that transport gas or vapor from a piece or pieces of equipment to a control device (40 CFR 61.241).
- *Cold Cleaning Machine* - any device or piece of equipment that contains and/or uses liquid solvent, into which parts are placed to remove soils from the surface of the parts or to dry the parts. Cleaning machines that contain and use heated, nonboiling, solvent to clean the parts are classified as cold cleaning machine (40 CFR 63.461).
- *Commercial Refrigeration* - means, for the purposes of 40 CFR 82.156(i), the refrigeration appliances utilized in the retail food and cold storage warehouse sectors. Retail food includes the refrigeration equipment found in supermarkets, convenience stores, restaurants, and other food service establishments. Cold storage includes the equipment used to store meat, produce, dairy products, and other perishable goods. All of the equipment contains large refrigerant charges, typically over 75 lb [34.02 kg] (40 CFR 82.152(e)).
- *Continuous Cleaning Machine* - see In-Line Cleaning Machine.
- *Designated Volatility Attainment Area* - an area not designated as being in nonattainment with the NAAQS for ozone (40 CFR 80.2).
- *Designated Volatility Nonattainment Area* - any area designated as being in nonattainment with the National Ambient Air Quality Standard (NAAQS) for ozone pursuant to rule making under Section 107(d)(4)(A)(ii) of the CAAA90 (40 CFR 80.2).
- *Diesel Fuel* - any fuel sold in any state and suitable for use in diesel motor vehicles and diesel motor vehicle engines, and which is commonly or commercially known or sold as diesel fuel (40 CFR 80.2).



- *Disposal* - the process leading to and including (40 CFR 82.152(f)):
  1. the discharge, deposit, dumping, or placing of any discarded appliance into or on any land or water
  2. the disassembly of any appliance for discharge, deposit, dumping, or placing of its discarded component parts into or on any land or water
  3. the disassembly of an appliance for reuse of its component parts.
- *Dwell* - the technique of holding parts within the freeboard area but above the vapor zone of the solvent cleaning machine. Dwell occurs after cleaning to allow solvent to drain from the parts or parts baskets back into the solvent cleaning machine (40 CFR 63.461).
- *Existing* - any solvent cleaning machine the construction or reconstruction of which was commences on or before 29 November 1993 (40 CFR 63.461).
- *Federally Enforceable* - all limitations and conditions enforceable by the Administrator, including those requirements developed pursuant to 40 CFR 60 and 61, requirements within any applicable state implementation plan, and any permit requirements established pursuant to 40 CFR 52.21 or under 40 CFR 51.18 and 40 CFR 51.24 (40 CFR 60.41b).
- *Freeboard Area* - for a batch cleaning machine this is the area within the solvent cleaning machine that extends from the solvent/air interface to the top of the solvent cleaning machine; for an in-line cleaning machine, it is the area within the solvent cleaning machine that extends from the solvent/air interface to the bottom of the entrance or exit opening, whichever is lower (40 CFR 63.461).
- *Freeboard Ratio* - the ratio of the solvent cleaning machine freeboard height to the smaller interior dimensions (length, width, or diameter) of the solvent cleaning machine (40 CFR 63.461)
- *Gasoline Carrier* - any distributor who transports or stores, or causes the transportation or storage of gasoline or diesel fuel without taking title to or otherwise having any ownership of the gasoline, and without altering either the quality or quantity of the gasoline or diesel fuel (40 CFR 80.2).
- *Gasoline Distributor* - any person who transports or stores, or causes the transportation or storage of gasoline or diesel fuel at any point between any gasoline refinery or importer's facility and any retail outlet or wholesale purchaser consumer facility (40 CFR 80.2).
- *Halogenated Hazardous Air Pollutant (HAP) Solvent* - methylene chloride (CAS No. 75-09-2), perchloroethylene (CAS No. 127-18-4), trichloroethylene (CAS No. 79-01-6), 1,1,1-trichloroethane (CAS No. 71-55-6), carbon tetrachloride (CAS No. 56-23-5), and chloroform (CAS 67-66-3) (40 CFR 63.461).
- *High-Pressure Appliance* - an appliance that uses a refrigerant with a boiling point between -50 and 10 ° C [-58 and 50°F] at atmospheric pressure (29.9 in. [75.946 cm] Hg). This definition includes but is not limited to appliances using refrigerants -12, -22, -114, -500, or -502 (40 CFR 82.152(g)).
- *Idling Mode* - the time period when a solvent cleaning machine is not actively cleaning parts and the sump heating coils, if present, are turned on (40 CFR 63.461).

- *Idling Mode Cover* - any cover or solvent cleaning machine design that allows for the cover to shield the cleaning machine openings during the idling mode. A cover that meets this definition can also be used as a working mode cover if that definition is also met (40 CFR 63.461).
- *Immersion Cold Cleaning Machine* - a cold cleaning machine in which the parts are immersed in the solvent when being cleaned. A remote reservoir cold cleaning machine that is also an immersion cold cleaning machine is considered an immersion cold cleaning machine for the purposes of this subpart (40 CFR 63.461).
- *Industrial Process Refrigeration* - means, for the purposes of 40 CFR 82.156(i), complex customized appliances used in the chemical, pharmaceutical, petrochemical, and manufacturing industries. This sector also includes industrial ice machines and ice rinks (40 CFR 82.152(h)).
- *In-Line Cleaning Machine or Continuous Cleaning Machine* - a solvent cleaning machine that uses an automated parts handling system, typically a conveyor, to automatically provide a continuous supply of parts to be cleaned. These units are fully enclosed except for the conveyor inlet and exit portals. In-line cleaning machines can be either cold or vapor cleaning machines (40 CFR 63.461).
- *Lip Exhaust* - a device installed at the top of the opening of a solvent cleaning machine that draws in air and solvent vapor from the freeboard area and ducts the air and vapor away from the solvent cleaning area (40 CFR 63.461).
- *Low-Loss Fitting* - any device that is intended to establish a connection between hoses, appliances, or recovery or recycling machines and that is designed to close automatically or to be closed manually when disconnected, minimizing the release of refrigerant from hoses, appliances, and recovery or recycling machines (40 CFR 82.152(i)).
- *Low-Pressure Appliance* - an appliance that uses a refrigerant with a boiling point above 10 ° C [50° F] at atmospheric pressure (29.9 in. [75.946 cm] Hg). This definition includes but is not limited to equipment utilizing refrigerants -11, -113, and -123 (40 CFR 82.152(j)).
- *Major Maintenance, Service, or Repair* - any maintenance, service, or repair involving the removal of any or all of the following appliance components (40 CFR 82.152(k)):
  1. compressor
  2. condenser
  3. evaporator
  4. auxiliary heat exchanger coil.
- *Management Practice (MP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- *Modification* - in relation to NSPS, any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies except (40 CFR 60.14):
  1. maintenance, repair, and replacement which the Administrator determines to be routine for a source category

2. an increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility
  3. an increase in the hours of operation
  4. use of an alternate fuel or raw material if, prior to the date any standard under this part becomes applicable to that source type, the existing facility was designed to accommodate that alternate use. A facility will be designed to accommodate an alternative fuel an alternative fuel or raw material if that use could be accomplished under the facility's construction specifications as assessed prior to the change
  5. the addition or use of any system or device whose primary function is the reduction of air pollutants, except when an emission control system is removed or replaced by a system which the Administrator determines to be less than environmentally beneficial
  6. the relocation or change in ownership of an existing facility.
- *Motor Vehicle Air-Conditioner (MVAC)* - any appliance that is an MVAC as defined in 40 CFR 82, subpart B (40 CFR 82.152(l)).
  - *MVAC-Like Appliance* - mechanical vapor compression, open-drive compressor appliances used to cool the driver's or passenger's compartment of a nonroad motor vehicle. This includes the air conditioning equipment found on agricultural or construction vehicles. This definition is not intended to cover appliances using HCFC-22 refrigerant (40 CFR 82.152(m)).
  - *New* - in relation to solvent cleaning machines, any solvent cleaning machine the construction or reconstruction of which is commenced after 29 November 1993 (40 CFR 63.461).
  - *Normally Containing a Quantity of Refrigerant* - containing the quantity of refrigerant within the appliance or appliance component when the appliance is operating with a full charge of refrigerant (40 CFR 82.152(n)).
  - *Opacity* - the degree to which emissions reduce the transmission of light and obscure view of an object in the background (40 CFR 60.2).
  - *Open Top Vapor Cleaning Machine* - a batch solvent cleaning machine that has its upper surface open to the air and boils solvents to create solvent vapor used to clean and/or dry parts (40 CFR 63.461).
  - *Opening An Appliance* - any service, maintenance, or repair on an appliance that would release class I or class II refrigerant from the appliance to the atmosphere unless the refrigerant were previously recovered from the appliance (40 CFR 82.152(o)).
  - *Process Stub* - a length of tubing that provides access to the refrigerant inside a small appliance or room air conditioner and that can be resealed at the conclusion of repair or service (40 CFR 82.152(q)).
  - *Reclaim Refrigerant* - to reprocess refrigerant to at least the purity specified in the Air Conditioning and Refrigeration Institute (ARI) Standard 700-1988, *Specifications for Fluorocarbon Refrigerants* (Appendix A to 40 CFR 82, subpart F) and to verify this purity using the analytical methodology prescribed in the ARI Standard 700-1988. In general, reclamation

involves the use of processes or procedures available only at a reprocessing or manufacturing facility (40 CFR 82.152(r)).

- *Reclaimer* - a machine used to remove perchloroethylene from articles by tumbling them in a heated air stream (40 CFR 63.321).
- *Recover Refrigerant* - to remove refrigerant in any condition from an appliance and to store it in an external container without necessarily testing or processing it in any way (40 CFR 182.52(s)).
- *Recovery Efficiency* - the percentage of refrigerant in an appliance that is recovered by a piece of recycling or recovery equipment (40 CFR 82.152(t)).
- *Recycle Refrigerant* - to extract refrigerant from an appliance and clean refrigerant for reuse without meeting all of the requirements for reclamation. In general, recycled refrigerant is refrigerant that is cleaned using oil separation and single or multiple passes through devices, such as replaceable core filter-driers, which reduce moisture, acidity, and particulate matter. These procedures are usually implemented at the field job site (40 CFR 82.152(u)).
- *Refrigerated Condenser* - a vapor recovery system into which an air-perchloroethylene gas-vapor stream is routed and the perchloroethylene is condensed by cooling the gas-vapor stream (40 CFR 63.321).
- *Remote Reservoir Cold Cleaning Machine* - any device in which liquid solvent is pumped to a sink-like work area that drains solvent back into an enclosed container while parts are being cleaned, allowing no solvent to pool in the work area (40 CFR 63.461).
- *Self-Contained Recovery Equipment* - refrigerant recovery or recycling equipment that is capable of removing the refrigerant from an appliance without the assistance of components contained in the appliance (40 CFR 82.152(w)).
- *Small Appliance* - any of the following products that are fully manufactured, charged, and hermetically sealed in a factory with 5 lb [11.02 kg] or less of refrigerant (40 CFR 82.152(x)):
  1. refrigerators designed for home use
  2. freezers designed for home use
  3. room air conditioners (including window air conditioners and packaged terminal air conditioners)
  4. packaged terminal heat pumps
  5. dehumidifiers
  6. under-the-counter ice makers
  7. vending machines
  8. drinking water coolers.
- *Solvent/Air Interface* - for a vapor cleaning machine, the location of contact between the concentrated solvent vapor layer and the air. This location of contact is defined as the in-line height of the primary condenser coils. For a cold cleaning machine, it is the location of contact between the liquid solvent and the air (40 CFR 63.461).

- *Solvent Cleaning Machine* - any device or piece of equipment that uses halogenated HAP solvent liquid or vapor to remove soils from the surface of materials. Types of solvent cleaning machines include, but are not limited to, batch vapor, in-line vapor, in-line cold, and batch cold solvent cleaning machines (40 CFR 63.461).
- *Superheated Vapor System* - a systems that heats the solvent vapor either passively or actively, to a temperature above the solvents boiling point. Parts are held in the superheated vapor before exiting the machine to evaporate the liquid solvent on them. Hot vapor recycle is an example of a superheated vapor system (40 CFR 63.461).
- *System-Dependent Recovery Equipment* - refrigerant recovery equipment that requires the assistance of components contained in an appliance to remove the refrigerant from the appliance (40 CFR 82.152(y)).
- *Technician* - any person who performs maintenance, service, or repair that could reasonably be expected to release Class I or Class II refrigerants from appliances, except for MVACs, into the atmosphere. Technician also means any person who performs disposal of appliances except for small appliances, MVAC, and MVAC-like equipment that could be reasonably expected to release class I or class II refrigerants from the appliances into the atmosphere. Technician includes but is not limited to installers, contractor employees, in-house service personnel, and in some cases, owners (40 CFR 82.152(z)).
- *Vapor Cleaning Machine* - a batch or in-line solvent cleaning machine that boils liquid solvent generating solvent vapor that is used as a part of the cleaning or drying cycle (40 CFR 63.461).
- *Very High-Pressure Appliance* - an appliance that uses a refrigerant with a boiling point below - 50 ° C [-58°F] at atmospheric pressure (29.9 in. [75.95 cm] Hg). This definition includes but is not limited to equipment utilizing refrigerants -13 and -503 (40 CFR 82.152(aa)).
- *Very Low Sulfur Oil* - an oil that contains no more than 0.5 weight percent sulfur or that, when combusted without SO<sub>2</sub> emission control, has a SO<sub>2</sub> emission rate equal to or less than 215 ng/J (0.5 lb/MBtu) heat input (40 CFR 60.41b).
- *Volatile Organic Compound (VOC)* - any compound of carbon, excluding CO, CO<sub>2</sub>, carbonic acid, metallic carbides, or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions (40 CFR 51.100).
- *VOC Service* - in relationship to fugitive emissions, this is when a piece of equipment contains or contacts a process fluid that is at least 10 percent VOC by weight (40 CFR 61.241).
- *Voluntary Certification Program* - a technician testing program operated by a person before that person obtained approval of a technician certification program (40 CFR 82.1523(bb)).
- *Wholesale Purchaser-Consumer* - any organization that is an ultimate consumer of gasoline or diesel fuel and which purchases or obtains gasoline or diesel fuel from a supplier for use in motor vehicles and receives delivery of that product into a storage tank of at least

550 gal [2081.98 L] capacity substantially under the control of that organization (40 CFR 80.2).

- *Working Mode* - the time period when the solvent cleaning machine is actively cleaning parts (40 CFR 63.461).
- *Working Mode Cover* - any cover or solvent cleaning machine design that allows the cover to shield the cleaning machine openings from outside air disturbances while parts are being cleaned in the cleaning machine. A cover that is used during the working mode is opened only during parts entry and removal. A cover that meets this definition can also be used as an idling mode cover if that definition is also met (40 CFR 63.461).



**AIR EMISSIONS MANAGEMENT**  
**GUIDANCE FOR CHECKLIST USERS**

	<b>REFER TO CHECKLIST ITEMS:</b>	<b>REFER TO PAGE NUMBER:</b>
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CFCs and Halons		
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Repair/Recycling	1-17 through 1-33	1-27
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## **AIR EMISSIONS MANAGEMENT**

### **Records To Review**

- State and local air pollution control regulations
- FWS air pollution control regulations
- Emissions inventory
- All air pollution source permits
- Plans and procedures applicable to air pollution control
- Emission monitoring records
- Opacity records
- Notices of violation (NOVs) from regulatory authorities
- Instrument calibration and maintenance records
- Reports/complaints concerning air quality
- Air Emergency Episode Plan
- State and/or Federal regulatory inspections
- Regulatory inspection reports
- Documentation of preventive measure or action
- Results of air sampling at the conclusion of response action
- Training records and certificates pertaining to refrigerant reclaiming/recovery

### **Physical Features To Inspect**

- All air pollution sources (fuel burners, incinerators, VOC sources, etc.)
- Air pollution monitoring and control devices
- Air emission stacks
- Air intake vents



**COMPLIANCE CATEGORY:**  
**AIR EMISSIONS MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<p><b>ALL FACILITIES</b></p> <p><b>1-1.</b> The current status of any ongoing or unresolved consent orders, compliance agreements, notices of violation (NOVs), inter-agency agreements, or equivalent state enforcement actions is required to be examined (a finding under this checklist item will have the enforcement action/identifying information as the citation).</p> <p><b>1-2.</b> FWS facilities are required to comply with state and local air quality regulations (CAAA90, 42 USC 7418(a)).</p>	<p>Determine if noncompliance issues have been resolved by reviewing a copy of the previous report, consent orders, compliance agreements, NOVs, inter-agency agreements, or equivalent state enforcement actions.</p> <p>Verify that the facility is complying with state and local air quality requirements.</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies.</p> <p>(NOTE: See Appendix 1-1 for a list of Service facilities located in Class I areas.)</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- air pollution episode standby plans</li> <li>- permits for construction and operation of sources of emissions</li> <li>- placement of control devices on fuel burning sources</li> <li>- incinerators with less than 45 metric tons/day (50 tons/day) heat input</li> <li>- open burning and detonation</li> <li>- prescribed burning and trash burning</li> <li>- firefighting training</li> <li>- motor vehicle emissions and inspections</li> <li>- use of vapor control systems at gas dispensing facilities</li> <li>- transfer of fuel in tank trucks</li> <li>- solvent metal cleaners such as degreasers and cold cleaners</li> <li>- fugitive dust emissions from sources such as roads, quarries, sand and gravel pits, and construction activities</li> <li>- control of particulate emissions from woodworking shops</li> <li>- transportation of refuse or materials in open vehicles</li> <li>- emissions and emission control requirements for the operation of existing fossil fuel-fired steam generators</li> </ul>

REGULATORY REQUIREMENTS:	REVIEWER CHECKS: July 1995
<p><b>1-2. (continued)</b></p>	<ul style="list-style-type: none"> <li>- the spray painting of vehicles, buildings, and/or furniture</li> <li>- certification of vehicles transporting VOC liquids</li> <li>- certification for operators of boilers paving of roads and parking lots</li> <li>- certification for CFC replacement in vehicle air conditioning units</li> <li>- toxic air pollutants</li> <li>- indoor air pollution.)</li> </ul> <p>(NOTE: Under 42 USC 7418(c) and 7418(d), each department, agency, and instrumentality of executive, legislative, and judicial branches of the Federal Government is required to comply with valid vehicle inspection and maintenance programs, except for vehicles that are considered military tactical vehicles. Also, all employees operating vehicles on a property or a facility over which the Federal Government has jurisdiction are required to furnish proof of compliance with applicable requirements of any valid vehicle inspection and maintenance programs. The facility shall use one of the following methods to establish proof of compliance:</p> <ul style="list-style-type: none"> <li>- presentation by the vehicle owner of a valid certificate of compliance</li> <li>- presentation by the vehicle owner of proof of vehicle registration within the geographic area covered by the vehicle inspection and maintenance program (except for any program whose enforcement mechanism is not through the denial of vehicle registration)</li> <li>- another method approved by the vehicle inspection and maintenance program administrator.)</li> </ul>
<p><b>1-3.</b> Facilities will meet regulatory requirements issued since the finalization of the handbook (a finding under this checklist item will have the citation of the new regulation as a basis of finding).</p>	<p>Determine if any new regulations concerning air quality have been issued since the finalization of the handbook.</p> <p>Verify that the facility is in compliance with newly issued regulations.</p>
<p><b>1-4.</b> FWS facilities should report all NOV's to the Region and the SPCO (MP).</p>	<p>Determine if the facility has received an NOV relating to air quality.</p> <p>Verify that the NOV was reported to the Region and the SPCO.</p>

<b>COMPLIANCE CATEGORY:</b> <b>AIR EMISSIONS MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<b>1-5.</b> Facilities which have major sources are required to apply for CAAA90 Title V Permits (40 CFR 70.1).	<p>Determine if the facility has any major sources.</p> <p>(NOTE: The emission threshold needed to qualify as a major source will vary depending on whether the source is classified as a major for criteria pollutants and whether it is located in an attainment or nonattainment area.)</p> <p>Verify that facilities with major air sources have applied for Title V permits.</p> <p>(NOTE: This is a state issued, Federally enforceable permit. If the states program has not been approved, the USEPA Region will issue the permit.)</p>
<b>1-6.</b> Each facility located in an ozone nonattainment area with stationary sources of NO <sub>x</sub> or VOCs is required to provide the state with a statement showing actual emissions of NO <sub>x</sub> and VOC from the sources (CAAA90, Section 182(a) (3)).	<p>Verify that the first statement, or inventory, was submitted by November 1993.</p> <p>Verify that the inventory is complete.</p> <p>Verify that statements have been submitted at least once a year after the initial statement indicating any changes or lack of change.</p> <p>(NOTE: See 40 CFR 81 for attainment status.)</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>PETROLEUM PRODUCTS</b></p> <p><b>1-7.</b> Leaded gasoline shall not be introduced into any motor vehicle that is labeled UNLEADED GASOLINE ONLY, or that is equipped with a gasoline tank filler inlet designed for introduction of unleaded gasoline (40 CFR 80.22(a)).</p> <p><b>1-8.</b> Fuel pumps are required to display specific signs (40 CFR 80.22(d) and 80.22(e)).</p>	<p>Interview personnel to determine what grades of gasoline are used, where they are dispensed, and what controls are in place to ensure proper fueling of vehicles.</p> <p>Inspect the facility gas stations to ensure that:</p> <ul style="list-style-type: none"> <li>- signs stating that only unleaded gas should be introduced into labeled vehicles are displayed at each pump stand</li> <li>- nozzles are properly sized</li> <li>- each fuel pump is labeled indicating the type of fuel, i.e., UNLEADED GASOLINE or CONTAINS LEAD ANTI-KNOCK COMPOUNDS.</li> </ul> <p>(NOTE: This requirement applies to "wholesale purchaser-consumers" which are defined as "any organization that is an ultimate consumer of gasoline or diesel fuel and which purchase or obtains gasoline or diesel fuel from a supplier for use in motor vehicles and receives delivery of that product into a storage tank of at least 550 gal capacity substantially under the control of that organization".)</p>

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**REGULATORY REQUIREMENTS:**

**REVIEWER CHECKS:**  
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**1-9.** Gasoline pumps dispensing oxygenated gasoline are required to meet specific labeling requirements (40 CFR 80.35).

Determine if the facility is located in an area with an oxygenated gasoline program with a minimum oxygen content per 1 gal [3.79 L] or minimum oxygen content requirements in conjunction with a credit program.

Verify that, if the facility is located in such an area, each gasoline pump dispensing oxygenated gasoline at a retail outlet has a label attached during the control period that states: THE GASOLINE DISPENSED FROM THIS PUMP IS OXYGENATED AND WILL REDUCE CO POLLUTION FROM MOTOR VEHICLES.

Verify that if the facility is located in an area with an oxygenated gasoline program, with a credit program, and no minimum oxygen content requirement, the fuel pump at a retail outlet in the control area has the following label: THE FUEL DISPENSED FROM THIS PUMP MEETS THE REQUIREMENTS OF THE CLEAN AIR ACT AS PART OF A PROGRAM TO REDUCE CO POLLUTION FROM MOTOR VEHICLES.

(NOTE: Consult with state and local authorities concerning control areas and control periods.)

**1-10.** During high ozone seasons, and regulatory control periods, gasoline shall not be sold, offered for sale, imported, dispensed, supplied, or transported, that exceeds specific Reid vapor pressure standards (40 CFR 80.27(a)(2) and 80.27(d)).

Verify that facilities are monitored as indicated:

- retailers and wholesale purchaser-consumers: during the high ozone season (1 June to 15 September of any year)
- importers, distributors, resellers, or carriers: during the regulatory control period (1 May to 15 September of any year).

Verify that a standard of 9.0 psi [62.05 kPa] is not exceeded for all designated volatility attainment areas.

Verify that the standards outlined in Appendix 1-2 are met for any designated volatility nonattainment areas (see 40 CFR 81).

(NOTE: Gasoline that contains denatured, anhydrous ethanol of at least 9 percent and no more than 10 percent, may exceed the Reid vapor pressure standards outlined in Appendix 1-2 by 1.0 psi [6.89 kPa].)



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>1-11.</b> No diesel fuel may be sold, supplied, or dispensed for motor vehicles unless it meets specific criteria (40 CFR 80.24(a)(1) and 80.29(a)).</p> <p><b>1-12.</b> After 1 January 1996 retailers and wholesale purchaser-consumers (see definitions) handling over 10,000 gal/mo [37,854.12 L/mo] of fuel are required to provide specific equipment on dispensing pumps (40 CFR 80.22(j)).</p>	<p>Verify that the diesel fuel for motor vehicles meets the following parameters:</p> <ul style="list-style-type: none"> <li>- it has a sulfur percentage, by weight no greater than 0.05 percent</li> <li>- it has a cetane index of at least 40 or a maximum aromatic content of 35 volume percent</li> <li>- it is free of visible evidence of the following: <ul style="list-style-type: none"> <li>- the blue green dye 1,4-dialkylamino-anthraquinone</li> <li>- the dye solvent red 164.</li> </ul> </li> </ul> <p>Determine if the facility handles over 10,000 gal/mo [37,854.12 L/mo] of fuel.</p> <p>Verify that each pump from which gasoline or methanol is introduced into motor vehicles is equipped with a nozzle that dispenses fuel at a flow rate not exceeding 10 gal/min [37.85 L].</p> <p>(NOTE: After 1 January 1998 this requirements applies to every retailer and wholesale purchaser-consumer regardless of size.)</p> <p>(NOTE: This requirement does not apply to pumps that are shown to be dedicated to heavy-duty vehicles.)</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>CFCs AND HALONS</b></p> <p><b>Purchasing/ Procurement</b></p> <p><b>1-13.</b> Facilities which sell Class I or Class II substances suitable for use as a refrigerant in containers of less than 20 lb [9.07 kg] are required to display a specific sign (40 CFR 82.42(c)).</p> <p><b>1-14.</b> Facilities are required to comply with restrictions concerning the use of CFC and halon substitutes (40 CFR 82.174(b) through 82.174(d)).</p> <p><b>1-15.</b> As of January 1, 2015 the use of Class II substances (see Appendix 1-3) is forbidden except in certain situations (42 USC 7671d(a)).</p>	<p>Verify that a sign is displayed stating the following:</p> <p style="padding-left: 40px;">IT IS A VIOLATION OF FEDERAL LAWS TO SELL CONTAINERS OF CLASS I AND CLASS II REFRIGERANT OF LESS THAN 20 LB OF SUCH REFRIGERANT TO ANY-ONE WHO IS NOT PROPERLY TRAINED AND CERTIFIED TO OPERATE APPROVED REFRIGERANT RECYCLING EQUIPMENT.</p> <p>(NOTE: See Appendix 1-3 for a list of Class I and Class II substances.)</p> <p>Verify that no personnel at the facility uses a substitute which they know, or have reason to know, was manufactured, processed, or imported in violation of Federal regulations.</p> <p>Verify that, when a substitute is used, it is an acceptable substitute and is used according to the use restriction outlined in Appendix 1-4.</p> <p>Verify that unacceptable substitutes are not used (see Appendix 1-5).</p> <p>Verify that a program is underway to eliminate the use of Class II substances unless:</p> <ul style="list-style-type: none"> <li>- the substance has been reused or recycled</li> <li>- it is used and entirely consumed (except for trace quantities) in the production of other chemicals</li> <li>- it is used as a refrigerant in appliances manufactured prior to 1 January 2020.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>1-16.</b> No Class I or Class II substances suitable for use in motor vehicles as a refrigerant (see Appendix 1-3) can be sold or distributed in any container that is less than 20 lb [9.07 kg] to any person unless that person is trained and certified (40 CFR 82.34(b) and 82.42(b)(3)).</p>	<p>Determine if the facility carries any of the Class I or Class II substances listed in Appendix 1-3.</p> <p>Verify these substances are only sold or distributed to certified individual by reviewing records of sales and distribution.</p> <p>Verify that distribution and sales records for these substances are kept for 3 yr.</p> <p>(NOTE: Sales of these substances can be made to an uncertified individual if the purchaser is purchasing small containers for resale only.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<p><b>CFCs AND HALONS</b></p> <p><b>Repair/Recycling</b></p> <p><b>1-17.</b> In order to protect the ozone, no person repairing or servicing motor vehicles for payment can service a MVAC in any way that affects the refrigerant unless they have been trained and certified and are using approved equipment (40 CFR 82.34(a), 82.42(a), 82.42(b)(1), 82.42(b)(2), and 82.42(b)(4)).</p> <p><b>1-18.</b> Recycling and recovery equipment for use in the maintenance, service, or repair of appliances, except MVACs and MVAC-like appliances, or during the disposal of appliances except small appliances, MVACs, and MVAC-like appliances is required to be certified by an approved equipment testing organization (40 CFR 82.158(a)).</p>	<p>Determine if the facility services MVAC for payment.</p> <p>Verify that the individual who does the repair is certified and that the equipment being used is approved by the USEPA.</p> <p>Verify that the USEPA Administration has been notified that there is an individual onsite who has been trained and certified that is performing MVAC repair.</p> <p>Verify that the facility keeps records of where the refrigerant is sent and personnel certification for 3 yr.</p> <p>(NOTE: These restrictions do not become effective until 1 January 1993 when less than 100 MVAC were serviced or repaired in calendar year 1990 and the USEPA Administrator was notified of the number of vehicles serviced by 13 August 1992.)</p> <p>(NOTE: Certifications are not transferable.)</p> <p>(NOTE: The term for payment is not clearly defined. For FWS facilities the interpretation will be that if the personnel repairing or servicing MVACs is a paid employee of the facility, they must be trained and certified.)</p> <p>Verify that the equipment which is used is certified.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<p><b>1-19.</b> Persons who maintain, service, or repair appliance, except MVACs, and persons who dispose of appliances, except for small appliances, room air conditioners, MVACs and MVAC-like appliances are required to be certified through an approved technician certification program (40 CFR 82.161).</p>	<p>Verify that personnel have received technician certification.</p> <p>(NOTE: Apprentices are exempt from this requirement if the apprentice is closely and continually supervised by a certified technician while performing any maintenance s, service, repair, or disposal that could reasonably be expected to release refrigerant from appliances into the environment.)</p>
<p><b>1-20.</b> No person maintaining, servicing, repairing, or disposing of appliances can knowingly vent or release to the environment any Class I or Class II substance used as a refrigerant (40 CFR 82.150 and 82.154(a)).</p>	<p>Determine if the facility is maintaining, servicing, repairing, or disposing of appliances containing refrigerants.</p> <p>Verify that Class I or II substances are not being vented to the atmosphere.</p> <p>(NOTE: <i>De minimis</i> releases that are associated with good faith attempts to recycle or recover refrigerants are not considered a violation.)</p> <p>(NOTE: These requirements apply to the following:</p> <ul style="list-style-type: none"> <li>- any person servicing, maintaining, or repairing appliances except for MVACs</li> <li>- persons disposing of appliances, including MVAC</li> <li>- refrigerant reclaimers, appliance owners, recycling and recovery equipment.)</li> </ul>
<p><b>1-21.</b> No person can open appliances, except MVACs, for maintenance, service, or repair, and no person can dispose of appliances, except for small appliances, MVAC, and MVAC-like appliances unless specific requirements are met (40 CFR 82.154(b), 82.156(a)(5)).</p>	<p>Verify that the required practices outline in 40 CFR 82.156 (see checklist items 1-24 through 1-33) are met.</p> <p>Verify that equipment is used that is certified for the appliance in question.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<p><b>1-22.</b> Facilities maintaining, servicing, or repairing appliances, except for MVACs, and facilities disposing of appliances, except for small appliances and MVACs, are required to submit certification to the USEPA (40 CFR 82.162(a)).</p>	<p>Verify that the facility has submitted certification to the USEPA that it has acquired certified recovery or recycling equipment and is in compliance with applicable requirements.</p> <p>(NOTE: Submission of certification is required no later than 12 August 1993 or 20 days after starting the business.)</p>
<p><b>1-23.</b> Facilities recovering refrigerant from small appliances, MVACs, and MVAC-like appliances for the purpose of disposal of these appliances are required to certify to the USEPA that appropriate recovery equipment has been acquired (40 CFR 82.162(c)).</p>	<p>Verify that the facility has submitted certification to the USEPA that it has acquired appropriate recovery equipment.</p>
<p><b>1-24.</b> Facilities opening appliances, except for small appliances and MVACs for maintenance, service, or repair and all persons disposing of appliances other than small appliances, MVACs, and MVAC-like appliances must have at least one piece of certified, self-contained recovery equipment available (40 CFR 82.156(b) and 82.156 (e)).</p>	<p>Verify that the facility has at least one available piece of equipment.</p> <p>(NOTE: Refrigerant may be returned to the appliance from which it is recovered or to another appliance without being recycled or reclaimed, unless the appliance is a MVAC or MVAC-like appliance.)</p> <p>(NOTE: Facilities that maintain, service, repair, or dispose of only appliances that they own and contain pump out units are exempt from this requirement, but not from other requirements of 40 CFR 82.156.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<p><b>1-25.</b> System dependent equipment must not be used with appliances normally containing more than 15 lb [6.80 kg] of refrigerant (40 CFR 82.156(c)).</p>	<p>Verify that system-dependent equipment is not used with appliances normally containing more than 15 lb [6.80 kg] of refrigerant unless the system dependent equipment is permanently attached to the appliance as a pump out unit.</p>
<p><b>1-26.</b> When appliances are opened for service, maintenance or repair, except for MVACs, the refrigerant must be evacuated in either the entire unit or the part to be serviced, if the part can be isolated, to a system receiver or a certified recovery or recycling machine (40 CFR 82.150 and 82.156(a)).</p>	<p>Verify that refrigerant is evacuated to either a system receiver or certified recovery or recycling machine.</p> <p>Verify that technicians ensure that the applicable level of evacuation has been reached in the appliance or the part before it is opened.</p>
<p><b>1-27.</b> When appliances, except for small appliances, MVAC, and MVAC-like appliance are disposed of, the refrigerant must be evacuated from the entire unit to a certified recovery or recycling machine (40 CFR 82.150 and 82.156(a)).</p>	<p>Verify that, if disposal is occurring, the refrigerant is being evacuated to a certified recovery or recycling machine.</p> <p>Verify that a certified technician ensures that the applicable level of evacuation has been reached in the appliance before it is opened.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>1-28.</b> When appliances, except for small appliance, MVAC, and MVAC-like appliances, are opened for maintenance, service, or repair, they must be evacuated to specific levels before the appliance is opened (40 CFR 82.150 and 82.156(a)(1) and 82.156(a)(2)).</p>	<p>Verify that evacuation is done to the levels in Appendix 1-6 prior to opening the appliance unless one of the following is met:</p> <ul style="list-style-type: none"> <li>- evacuation of the appliance is not to be done after completion of the maintenance service or repair, and the maintenance service or repair is not major</li> <li>- the evacuation limits in Appendix 1-6 are not possible because of leaks in the equipment, or the refrigerant being recovered would be substantially contaminated</li> <li>- the recycling or recovery equipment is certified.</li> </ul> <p>Verify that, if evacuation is not to be done after completion of the maintenance, service, or repair and the maintenance, service, or the repair is not major, the appliance is:</p> <ul style="list-style-type: none"> <li>- evacuated to a pressure no higher than 0 psig before it is opened if it is a high or very high-pressure appliance</li> <li>- pressurized to 0 psig before it is opened if it is a low pressure appliance.</li> </ul> <p>(NOTE: Persons pressurizing low pressure appliances that use refrigerants with boiling points at or below 85 °F at 29.9 in. Hg (e.g., CFC-11 or HCFC-123) must not use methods, such as nitrogen, that require subsequent purging. Persons pressurizing low-pressure appliances that use refrigerants with boiling points above 85 °F at 29.9 in. Hg (e.g., CFC 113) must use heat to raise the internal pressure, but may use nitrogen to raise the internal pressure of the appliance from the level attainable through use of heat to atmospheric pressure.)</p> <p>Verify that, if the evacuation limits in Appendix 1-6 are not possible because of leaks in the equipment or the refrigerant being recovered would be substantially contaminated, the person opening the appliance:</p> <ul style="list-style-type: none"> <li>- isolates leaking from nonleaking components whenever possible</li> <li>- evacuates leaking components to be opened to the lowest level that can be attained without substantially contaminating the refrigerant, in no case exceeding 0 psig.</li> </ul> <p>Verify that, if the recycling or recovery equipment is certified, the technicians follow the manufacturer's directions for achieving required recovery efficiency.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<p><b>1-29.</b> Appliances, except for small appliances, MVACs, and MVAC-like appliances, that are being disposed of, must be evacuated to the levels in Appendix 1-6 (40 CFR 82.150 and 82.156(a) (3)).</p> <p><b>1-30.</b> Specific evacuation limits must be met when opening small appliances for maintenance, service, or repair (40 CFR 82.150 and 82.156(a)(4)).</p> <p><b>1-31.</b> Facilities which take the final step in the disposal process of a small appliance, room air conditioning, MVACs, or MVAC-like appliances must meet specific standards (40 CFR 82.156(f), 82.166 (i) and 82.166(m)).</p>	<p>Verify that appliances are evacuated to the levels listed in Appendix 1-6 prior to disposal unless leaks in the appliance do not allow for the attainment of Appendix 1-6 or would substantially contaminate the refrigerant being recovered.</p> <p>Verify that, if Appendix 1-6 levels are not attainable, persons disposing of appliances:</p> <ul style="list-style-type: none"> <li>- isolate leaking from nonleaking components whenever possible</li> <li>- evacuate leaking components to the lowest level that can be attained without substantially contaminating the refrigerant (not to exceed 0 psig).</li> </ul> <p>Verify that, when recycling and recovery equipment manufactured prior to 15 November 1993 is used, 80 percent of the refrigerant is recovered or the small appliance is evacuated to 4 in. [13.55 kPa] of Hg vacuum.</p> <p>Verify that, when recycling and recovery equipment manufactured on or after 15 November 1993 is used, 90 percent of the refrigerant in the appliance is recovered when the compressor in the appliance is operating, or 80 percent of the refrigerant when the compressor is not operating or the small appliance is evacuated to 4 in. [10.16 cm] of Hg vacuum.</p> <p>(NOTE: This includes but is not limited to scrap recyclers and landfill operators.)</p> <p>Verify that facilities:</p> <ul style="list-style-type: none"> <li>- recover any remaining refrigerant from the appliance</li> <li>- check that the refrigerant has been evacuated from the appliance or shipment of appliances by reviewing a signed statement from the person from whom the appliance or shipment of appliances is obtained that all refrigerant has been recovered.</li> </ul> <p>Verify that copies of signed statements are retained for 3 yr.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<p><b>1-32.</b> Facilities recovering refrigerant for the purpose of disposal must meet specific standards (40 CFR 82.156(g) and 82.156(h)).</p> <p><b>1-33.</b> Leaking appliances must be repaired when specific limits are exceeded (40 CFR 82.156(i)).</p>	<p>Verify that, if the facility recovers refrigerant from MVACs and MVAC-like appliances for the purpose of disposal of the appliance, the system pressure is reduced to or below 102 mm [13.60 kPa] of Hg vacuum.</p> <p>Verify that the facility recovering refrigerant from small appliances for the purpose of disposal of the appliance does one of the following:</p> <ul style="list-style-type: none"> <li>- recover 90 percent of the refrigerant when the compressor in the appliance is operating</li> <li>- recover 80 percent of the refrigerant in the appliance when the compressor in the appliance is not operating</li> <li>- evacuate the small appliance to 4 in. [13.55 kPa] of Hg vacuum.</li> </ul> <p>Verify that, if the facility owns commercial and industrial process refrigeration equipment normally containing more than 50 lb [18.5 kg] of refrigerant, all leaks are repaired if the equipment is leaking at a rate such that the loss of refrigerant will exceed 35 percent of the total charge during a 12-mo period.</p> <p>Verify that other appliances normally containing more than 50 lb [22.68 kg] of refrigerant are repaired if the appliance is leaking at a rate such that the loss of refrigerant will exceed 15 percent of the total charge during a 12-mo period.</p> <p>(NOTE: Leaks are not required to be repaired if, within 30 days, the facility has developed a 1-yr retrofit or retirement plan for the leaking equipment. The plan, or a legible copy, must be kept at the site of the equipment.)</p> <p>Verify that leaks have been repaired within 30 days of discovery or within 30 days of when the leak should have been discovered, if the facility intentionally shielded themselves from information which would have revealed a leak.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>CFCs AND HALONS</b></p> <p><b>Recordkeeping</b></p> <p><b>1-34.</b> Facilities that sell or distribute any Class I or Class II substance for use as a refrigerant are required to retain invoices (40 CFR 82.166(a) and 82.166 (m))</p> <p><b>1-35.</b> Facilities servicing appliances normally containing 50 lb [22.68 kg] or more of refrigerant are required to supply the owner of the appliance with documentation as to how much refrigerant was added and the owner of the appliance must retain the servicing records (40 CFR 82.166(j), 82.166(k), and 82.166(m)).</p>	<p>Verify that facilities that sell or distribute any Class I or Class II substance for use as a refrigerant retain invoices indicating the name of the purchaser, the date of sale, and the quantity of refrigerant purchased.</p> <p>Verify that records are retained for 3 yr.</p> <p>Verify that documentation of servicing and amounts of refrigerant added is provided to the appliance owner and retained for 3 yr.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>DEGREASING OPERATIONS</b></p> <p><b>Cold Cleaning</b></p> <p><b>1-36.</b> Facilities with immersion batch cold solvent cleaning machines are required to comply with specific parameters (40 CFR 63.462(a)).</p> <p><b>1-37.</b> Immersion batch cold solvent cleaning machines with tightly fitting covers and a freeboard ratio of 0.75 or greater are required to be operated according to specific parameter (40 CFR 63.462(c) (1) through 63.462(c) (2)).</p>	<p>(NOTE: The requirements in 40 CFR 63.460 through 63.469 apply to each individual batch vapor, in-line vapor, in-line cold, and batch cold solvent cleaning machine that uses any solvent containing methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, or chloroform, or any combination of these halogenated HAP solvents, in total concentration greater than 5 percent by weight, as a cleaning and/or drying agent.)</p> <p>Verify that one of the following is met:</p> <ul style="list-style-type: none"> <li>- a tightly fitting cover is used that is closed at all times except during parts entry and removal, and a water layer a a minimum thickness of 2.5 cm (1 in.) on the surface of the solvent within the cleaning machine</li> <li>- a tightly fitting cover is used that is closed at all times except during part entry and removal and there is a freeboard ratio of 0.75 or greater.</li> </ul> <p>Verify that all waste solvent is collected and stored in closed containers</p> <p>(NOTE: The closed container may contain a device that allows pressure relief, but does not allow liquid solvent to drain from the container.)</p> <p>Verify that if a flexible hose or flushing device is used, flushing is performed only within the freeboard area of the solvent cleaning machine.</p> <p>Verify that solvent cleaned parts are drained for 15 s or until dripping has stopped, whichever is longer.</p> <p>(NOTE: Parts having cavities or blind holes shall be tipped or rotated while draining.)</p> <p>Verify that the solvent level does not exceed the fill line.</p> <p>Verify that spills during solvent transfer are wiped up immediately and the rags stored in a covered container.</p> <p>Verify that, when an air- or pump-agitated solvent bath is used, the agitator is operated to produce a rolling motion of the solvent but not observable splashing.</p> <p>Verify that, when the cover is open, the cold cleaning machine is not exposed to drafts greater than 40 m/min (132 ft/min) as measured between 1 and 2 m (3.3 and 6.6 ft) upwind and at the same elevation as the tank lip.</p> <p>Verify that sponges, fabric, wood, and paper products are not cleaned.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>1-38.</b> Remote-reservoir batch cold solvent cleaning machines are required to have a tightly fitting cover over the sump that is closed at all times except during the cleaning of parts and must be operated according to specific parameters (40 CFR 63.462(b) and 63.462(c)(1) through 63.462(c)(2)).</p>	<p>Verify that remote-reservoir batch cold solvent cleaning machines have a tightly fitting cover over the sump that is closed at all times except during the cleaning of parts.</p> <p>Verify that all waste solvent is collected and stored in closed containers</p> <p>(NOTE: The closed container may contain a device that allows pressure relief, but does not allow liquid solvent to drain from the container.)</p> <p>Verify that, if a flexible hose or flushing device is used, flushing is performed only within the freeboard area of the solvent cleaning machine.</p> <p>Verify that solvent cleaned parts are drained for 15 s or until dripping has stopped, whichever is longer.</p> <p>(NOTE: Parts having cavities or blind holes shall be tipped or rotated while draining.)</p> <p>Verify that the solvent level does not exceed the fill line.</p> <p>Verify that spills during solvent transfer are wiped up immediately and the rags stored in a covered container.</p> <p>Verify that, when an air- or pump-agitated solvent bath is used, the agitator is operated to produce a rolling motion of the solvent but not observable splashing.</p> <p>Verify that, when the cover is open, the cold cleaning machine is not exposed to drafts greater than 40 m/min (132 ft/min) as measured between 1 and 2 m (3.3 and 6.6 ft) upwind and at the same elevation as the tank lip.</p> <p>Verify that sponges, fabric, wood, and paper products are not cleaned.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>DEGREASING OPERATIONS</b></p> <p><b>Vapor Cleaning</b></p> <p><b>1-39.</b> Batch vapor or in-line solvent cleaning machines are required to be designed to meet specific standards (40 CFR 63.463(a)).</p>	<p>(NOTE: The requirements in 40 CFR 63.400 through 63.409 apply to each individual batch vapor, in-line vapor, in-line cold, and batch cold solvent cleaning machine that uses any solvent containing methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, or chloroform, or any combination of these halogenated HAP solvents, in total concentration greater than 5 percent by weight, as a cleaning and/or drying agent.)</p> <p>Verify that each cleaning machine is designed and operated to meet the following equipment or technique requirements:</p> <ul style="list-style-type: none"> <li>- there is an idling and downtime mode cover that can be readily opened or closed that completely covers the cleaning machine opening when in place, and is free of cracks, holes, or other defects</li> <li>- there is a reduce room draft so that when the cover is open, the machine is not exposed to drafts greater than 40 m/min (132 ft/min) as measured between 1 and 2 m (3.3 and 6.6 ft) upwind and at the same elevation as the tank lip.</li> </ul> <p>Verify that there is a freeboard ratio of 0.75 or greater.</p> <p>Verify that each cleaning machine has an automated parts handling system capable of moving parts or parts baskets at a speed of 3.4 m/min (11 ft/min) or less from the initial loading of parts through removal of cleaned parts.</p> <p>Verify that each vapor cleaning machine is equipped with a:</p> <ul style="list-style-type: none"> <li>- device that shuts off the sump heat if the sump liquid solvent level drops to the sump heater coils</li> <li>- vapor level control device that shuts off sump heat if the vapor level in the vapor cleaning machine rises above the height of the primary condenser</li> <li>- primary condenser.</li> </ul> <p>Verify that each cleaning machine which uses a lip exhaust is designed and operated to route all collected solvent vapors through a properly operated and maintained carbon adsorber.</p>

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<p><b>1-40.</b> Batch vapor or in-line solvent cleaning machines are required to be operated according to specific standards (40 CFR 63.463 (d)).</p>	<p>Verify that air distribution across the cleaning machine opening is controlled by using one of the following:</p> <ul style="list-style-type: none"> <li>- covers are in place during idling mode and during the downtime mode unless either the solvent has been removed from the machine or maintenance or monitoring is being performed that required the cover to not be in place</li> <li>- there is a reduced room draft so that when the cover is open, the machine is not exposed to drafts greater than 40 m/min (132 ft/min) as measured between 1 and 2 m (3.3 and 6.6 ft) upwind and at the same elevation as the tank lip.</li> </ul> <p>Verify that the parts basket or the parts being cleaned in an open-top batch vapor cleaning machine does not occupy more than 50 percent of the solvent/air interface area unless that parts basket or the parts are introduced at a speed of 0.9 m/min (3 ft/min) or less.</p> <p>Verify that any spraying operations are done within the vapor zone or within a section of the solvent cleaning machine that is not directly exposed to the ambient air.</p> <p>Verify that parts are oriented so that solvent drains from them freely.</p> <p>Verify that parts baskets or parts are not removed from any solvent cleaning machine until dripping has stopped.</p> <p>Verify that, during startup of each vapor cleaning machine, the primary condenser is turned on before the sump heater.</p> <p>Verify that, during shutdown of a vapor cleaning machine, the sump heater is turned off and the solvent vapor layer allowed to collapse before the primary condenser is turned off.</p> <p>Verify that, when solvent is added or drained, the solvent is transferred using threaded or other leakproof couplings and the end of the pipe in the solvent sump is located beneath the liquid solvent surface.</p> <p>Verify that solvent cleaning machines and controls are maintained as recommended by the manufacturer.</p> <p>(NOTE: The USEPA Administrator may request operators of solvent cleaning machines to take test on solvent cleaning machine procedures. This test is only required at the request of the Administrator.)</p> <p>Verify that waste solvent, still bottoms, and sump bottoms are collected and stored in closed containers.</p> <p>(NOTE: The closed container may contain a device that allows pressure relief, but does not allow liquid solvent to drain from the container.)</p>

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<p><b>1-40. (continued)</b></p> <p><b>1-41.</b> Batch vapor cleaning machines are required to be designed and operated to meet specific emission control standards (40 CFR 63.463(b)).</p>	<p>Verify that sponges, fabric, wood, and paper products are not cleaned.</p> <p>Verify that batch vapor cleaning machines with a solvent/air interface area of 1.21 m<sup>2</sup> (13 ft<sup>2</sup>) or less meets one of the following:</p> <ul style="list-style-type: none"> <li>- one of the following control methods is used or equivalent other methods: <ul style="list-style-type: none"> <li>- working mode cover, freeboard ration of 1.0, superheated vapor</li> <li>- freeboard refrigeration device, superheated vapor</li> <li>- working mode cover, freeboard refrigeration device</li> <li>- reduced room draft, freeboard ratio of 1.0, superheated vapor</li> <li>- freeboard refrigeration device, reduced room draft</li> <li>- freeboard refrigeration device, freeboard ratio of 1.0</li> <li>- freeboard refrigeration device, dwell</li> <li>- reduced room draft, dwell, freeboard ratio of 1.0</li> <li>- freeboard refrigeration device, carbon adsorber</li> <li>- freeboard ratio of 1.0, superheated vapor, carbon adsorber.</li> </ul> </li> <li>- the solvent cleaning machine can achieve and maintain an idling emission limit of 0.22 kg/h/m<sup>2</sup> (0.045 lb/h/ft<sup>2</sup>) of solvent/air interface area.</li> </ul> <p>Verify that batch vapor cleaning machines with a solvent/air interface area greater than 1.21 m<sup>2</sup> (13 ft<sup>2</sup>) meets one of the following:</p> <ul style="list-style-type: none"> <li>- one of the following control combinations is used or other equivalent methods: <ul style="list-style-type: none"> <li>- freeboard refrigeration device, freeboard ratio of 1.0, superheated vapor</li> <li>- dwell, freeboard refrigeration device, reduced room draft</li> <li>- working-mode cover, freeboard refrigeration device, superheated vapor</li> <li>- freeboard ratio of 1.0, reduced room draft, superheated vapor</li> <li>- freeboard refrigeration device, reduced room draft, superheated vapor</li> <li>- freeboard refrigeration device, reduced room draft, freeboard ratio of 1.0</li> <li>- freeboard refrigeration device, superheated vapor, carbon adsorber</li> </ul> </li> <li>- the solvent cleaning machine can achieve and maintain an idling emission limit of 0.22 kg/h/m<sup>2</sup> (0.045 lb/h/ft<sup>2</sup>) of solvent/air interface area.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>1-42.</b> In-line cleaning machines are required to be designed and operated to meet specific emission control standards (40 CFR 63.463(c)).</p> <p><b>1-43.</b> Depending on the control techniques used to achieve compliance, specific actions are required to be done (40 CFR 63.463(e)(2)).</p>	<p>Verify that existing in-line cleaning machines meet one of the following:</p> <ul style="list-style-type: none"> <li>- one of the following control combinations is used: <ul style="list-style-type: none"> <li>- superheated vapor, freeboard ratio of 1.0</li> <li>- freeboard refrigeration device, freeboard ratio of 1.0</li> <li>- dwell, freeboard refrigeration device</li> <li>- dwell, carbon adsorber</li> </ul> </li> <li>- the in-line cleaning machine can achieve and maintain an idling emission limit of 0.10 kg/h/m<sup>2</sup> (0.021 lb/h/ft<sup>2</sup>) of solvent/air interface area.</li> </ul> <p>Verify that new in-line cleaning machines meet one of the following:</p> <ul style="list-style-type: none"> <li>- one of the following control combinations is used: <ul style="list-style-type: none"> <li>- superheated vapor, freeboard refrigeration device</li> <li>- freeboard refrigeration device, carbon adsorber</li> <li>- superheated vapor, carbon adsorber</li> </ul> </li> <li>- the in-line cleaning machine can achieve and maintain an idling emission limit of 0.10 kg/h/m<sup>2</sup> (0.021 lb/h/ft<sup>2</sup>) of solvent/air interface area.</li> </ul> <p>(NOTE: These requirements only apply to solvent cleaning machines as identified in 40 CFR 63.463(b) and 63.463(c), see checklist items 1-41 and 1-42.)</p> <p>Verify that if freeboard refrigeration devices are used, the chilled air blanket temperature measured at the center of the air blanket is not greater than 30 percent of the solvents boiling point.</p> <p>Verify that, if a reduced room draft is used to achieve compliance the following are done:</p> <ul style="list-style-type: none"> <li>- it is ensured that the flow or movement of air across the top of the freeboard area of the solvent cleaning machine enclosure does not exceed 15.2 m/min (50 ft/min) at any time</li> <li>- operating conditions under which the wind speed was demonstrated to be 15.2 m/min (50 ft/min) or less are established and maintained.</li> </ul> <p>Verify that, if a working mode cover is used to achieve compliance, the following are done:</p> <ul style="list-style-type: none"> <li>- the cover open only for part entrance and removal and completely covers the cleaning machine openings when closed</li> <li>- the working mode cover is maintained free of cracks, holes, and other defects.</li> </ul>

**COMPLIANCE CATEGORY:  
AIR EMISSIONS MANAGEMENT  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>1-43. (continued)</b></p>	<p>Verify that, if an idling mode cover is used to achieve compliance, the following are done:</p> <ul style="list-style-type: none"> <li>- the cover is in place whenever parts are not in the solvent cleaning machine and completely covers the cleaning machine openings when in place</li> <li>- the idling mode cover is maintained free of cracks, holes, and other defects.</li> </ul> <p>Verify that, if dwell is used to achieve compliance, the following are done:</p> <ul style="list-style-type: none"> <li>- the appropriate dwell time is determined for each part or parts basket or the maximum dwell time</li> <li>- after cleaning, each part is held in the freeboard area above the vapor zone for the dwell time necessary.</li> </ul> <p>Verify that, if a superheated vapor system is used to achieve compliance, the following are done:</p> <ul style="list-style-type: none"> <li>- the temperature of the vapor at the center of the superheated vapor is at least 10 °F above the solvents boiling point</li> <li>- the manufacturers specifications for determining the minimum proper dwell time are followed</li> <li>- the parts remain within the superheated vapor for at least the minimum proper dwell time.</li> </ul> <p>Verify that, if a carbon adsorber, in conjunction with a lip exhaust, is used to achieve compliance, the following are done:</p> <ul style="list-style-type: none"> <li>- the concentration of the organic solvent in the exhaust does not exceed 100 ppm of any halogenated HAP compound</li> <li>- the carbon adsorber bed is not bypassed during desorption</li> <li>- the lip exhaust is located above the solvent cleaning machine cover so that the cover closes below the lip exhaust level.</li> </ul>
<p><b>1-44.</b> Batch vapor or in-line cleaning machines that are meeting the requirements for idling emission limit standards are required to perform specific actions (40 CFR 63.463 (f)).</p>	<p>(NOTE: This applies to the idling emission limit standards outlined in 40 CFR 63.463(b) and 63.463(c), see checklist items 1-41 and 1-42.)</p> <p>Verify that an initial performance test was conducted to demonstrate compliance and establish parameters for monitoring.</p> <p>Verify that periodic monitoring is done.</p> <p>Verify that the solvent cleaning machine is being operated within the parameters identified in the initial performance test.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>1-45.</b> Instead of complying with the standards in 40 CFR 63.463, an operator may elect to comply with the standards outlined in 40 CFR 63.464 (40 CFR 63.464).</p>	<p>(NOTE: The requirements outlined in this checklist item can, at the designation of the operator, replace the requirements in 40 CFR 63.463, see checklist items 1-39 through 1-45 and 1-55.)</p> <p>Verify that, if the cleaning machine has a solvent/air interface, the following is done:</p> <ul style="list-style-type: none"> <li>- a log is maintained of solvent additions and deletions for each solvent cleaning machine</li> <li>- emissions are equal to or less than the following applicable emissions limit: <ul style="list-style-type: none"> <li>- batch vapor solvent cleaning machine - 150 kg/m<sup>2</sup>/mo</li> <li>- existing in-line solvent cleaning machines - 153 kg/m<sup>2</sup>/mo</li> <li>- new in-line solvent cleaning machines - 99 kg/m<sup>2</sup>/mo.</li> </ul> </li> </ul> <p>(NOTE: Measurements are 3 mo rolling average monthly emission limits.)</p> <p>Verify that, if the cleaning machine is a batch vapor cleaning machine and does not have a solvent/air interface, the following is done:</p> <ul style="list-style-type: none"> <li>- a log is maintained of solvent additions and deletions for each solvent cleaning machine</li> <li>- emissions are equal to or less than the following applicable emissions limit: <ul style="list-style-type: none"> <li>- for cleaning machines with a cleaning capacity that is less than or equal to 2.96 m<sup>3</sup>, the emissions limit is determined by either using the equation or the Table in Appendix 1-7</li> <li>- for cleaning machines with a cleaning capacity that is greater than 2.95 m<sup>3</sup>, the emissions limit is determined by using the equation in Appendix 1-7.</li> </ul> </li> </ul> <p>Verify that compliance with the 3 mo rolling average is demonstrated on a monthly basis.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>1-46.</b> Depending on the control techniques used to achieve compliance, specific monitoring is required to be done (40 CFR 63.466).</p>	<p>(NOTE: These requirements only apply to solvent cleaning machines as identified in 40 CFR 63.463(b) and 40 CFR 63.463(c), see checklist items 1-41 and 1-42.)</p> <p>Verify that monitoring is conducted as follows and the results recorded on a weekly basis:</p> <ul style="list-style-type: none"> <li>- if a freeboard refrigeration device is used to comply with the above standards, the operator uses a thermometer or thermocouple to measure the temperature of the center of the air blanket during the idling mode</li> <li>- if a superheated vapor system is used to comply, the operator uses a thermometer or thermocouple to measure the temperature in the center of the superheated vapor zone while the solvent cleaning machine is in the idling mode.</li> </ul> <p>Verify that monitoring is conducted as follows and the results recorded on a monthly basis:</p> <ul style="list-style-type: none"> <li>- if a cover (working mode, downtime mode, and/or idling mode) is used to comply, there is a visual inspection to identify any cracks, holes, or other defects and that the cover completely covers the machine when closed</li> <li>- if a dwell is used, the actual dwell time is determined by measuring the period of time that parts are held within the freeboard area of the solvent cleaning machine after cleaning.</li> </ul> <p>Verify that monitoring is conducted as follows when using reduced room draft:</p> <ul style="list-style-type: none"> <li>- if the reduced room draft is maintained by controlling room parameters, there is initial monitoring of the windspeed and of room parameters, quarterly monitoring of windspeed, and weekly monitoring of room parameters</li> <li>- if an enclosure (full or partial) is used to achieve a reduced room draft, there is an initial monitoring and thereafter monthly monitoring of the windspeed within the enclosure and a monthly visual inspection of the enclosure to determine if it is free of cracks, holes, and other defects.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<b>1-46. (continued)</b>	<p>(NOTE: These requirements for weekly and monthly monitoring and reduced room draft monitoring apply when the operator is complying with the following equipment standards:</p> <ul style="list-style-type: none"> <li>- using one of the approved control combinations for batch vapor solvent cleaning machines with a solvent/air interface of 1.21 m<sup>2</sup> (13 ft<sup>2</sup>) or less</li> <li>- using one of the approved control combinations for batch vapor solvent cleaning machines with a solvent/air interface of greater than 1.21 m<sup>2</sup> (13 ft<sup>2</sup>)</li> <li>- using one of the approved control combinations for existing in-line solvent cleaning machines</li> <li>- using one of the approved control combinations for new in-line solvent cleaning machines.)</li> </ul> <p>Verify that the operators of batch vapor or in-line solvent cleaning machines that are complying with the requirements in 40 CFR 63.463 (see checklist items 1-39 through 1-45 and 1-55) are monitoring the hoist speed as follows:</p> <ul style="list-style-type: none"> <li>- speed is determined by measuring the time it takes to travel a measured distance and dividing the measuring distance by the time</li> <li>- monitoring is done monthly, but if there are no exceedances the first year monitoring can be done quarterly</li> <li>- if there is an exceedance, monitoring is done monthly again</li> <li>- if it can be demonstrated to the Administrator in the initial compliance report that the hoist cannot exceed a speed of 3.4 m/min (11 ft/min) the required monitoring frequency is quarterly.</li> </ul> <p>Verify that operators using a carbon adsorber in order to achieve compliance measure and record the concentration of halogenated HAP solvent in the exhaust of the carbon adsorber weekly with a colorimetric detector tube and the test is conducted while the machine is in the working mode and venting to the adsorber.</p> <p>Verify that operators using idling emission limit standards for compliance using controls other than those already addressed in this checklist item establish a monitoring frequency for each control submit it to the Administrator for approval in the initial test report.</p>



<b>COMPLIANCE CATEGORY:</b> <b>AIR EMISSIONS MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<b>1-46. (continued)</b>	<p>(NOTE: These requirements for idling emissions monitoring apply when the operator is complying with the following equipment standards:</p> <ul style="list-style-type: none"> <li>- using a batch vapor cleaning machines with a solvent/air interface area of 1.21 m<sup>2</sup> (13 ft<sup>2</sup>) or less which can achieve and maintain an idling emission limit of 0.22 kg/h/m<sup>2</sup> (0.045 lb/h/ft<sup>2</sup>) of solvent/air interface area</li> <li>- using a batch vapor cleaning machines with a solvent/air interface area greater than 1.21 m<sup>2</sup> (13 ft<sup>2</sup>) which can achieve and maintain an idling emission limit of 0.22 kg/h/m<sup>2</sup> (0.045 lb/h/ft<sup>2</sup>) of solvent/air interface area</li> <li>- using an existing in-line cleaning machines which can achieve and maintain an idling emission limit of 0.10 kg/h/m<sup>2</sup> (0.021 lb/h/ft<sup>2</sup>) of solvent/air interface area</li> <li>- using a new in-line cleaning machine which can achieve and maintain an idling emission limit of 0.10 kg/h/m<sup>2</sup> (0.021 lb/h/ft<sup>2</sup>) of solvent/air interface area.)</li> </ul>
<p><b>1-47.</b> Operators of batch vapor or in-line solvent cleaning machines are required to keep specific records (40 CFR 63.467(a) and 63.467(b)).</p>	<p>Verify that operators of batch vapor or in-line solvent cleaning machines maintain the following records in written or electronic form for the life of the machine:</p> <ul style="list-style-type: none"> <li>- owners manuals, or if not available, written maintenance and operating procedures for the machine and the control equipment</li> <li>- the date of installation for the machine and all of its control devices</li> <li>- records of required tests of a dwell is used</li> <li>- records of the initial performance test for machines complying with the idling emissions limit standards</li> <li>- records of the halogenated HAP solvent content for each solvent used in a solvent cleaning machine.</li> </ul> <p>(NOTE: If the exact date of installation is not known, a letter certifying that the cleaning machine and control devices were installed prior to, or on, 29 November 1993 or after 29 November 1993 can be substituted.)</p> <p>Verify that operators of batch vapor or in-line solvent cleaning machines maintain the following records in written or electronic form for 5 yr:</p> <ul style="list-style-type: none"> <li>- the results of control device monitoring</li> <li>- information on action taken to comply with monitoring and performance test requirements</li> <li>- estimates of annual solvent consumption for each solvent cleaning machine</li> <li>- records of the date and result of weekly measurement if a carbon adsorber is used.</li> </ul>

**COMPLIANCE CATEGORY:**  
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**REGULATORY  
REQUIREMENTS:**

**1-48.** Operators of batch vapor or in-line solvent cleaning machines which choose to comply with the alternate standard of 40 CFR 63.464 are required to keep specific records (40 CFR 63.467(c) and 63.467(d)).

**REVIEWER CHECKS:**  
**July 1995**

Verify that operators of batch vapor or in-line solvent cleaning machines which choose to comply with the alternate standard of 40 CFR 63.464 maintain the following records in written or electronic form for 5 yr:

- the dates and amounts of solvent that are added to the solvent cleaning machine
- the solvent composition of the wastes removed from cleaning machines
- calculation sheets showing how monthly emissions and the rolling 3 mo average emissions were determined and the results of all calculations.

Verify that operators of batch vapor or in-line solvent cleaning machines without a solvent/air interface which choose to comply with the alternate standard of 40 CFR 63.464 maintain records on the method used to determine cleaning capacity of the cleaning machine.

**COMPLIANCE CATEGORY:  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>DEGREASING OPERATIONS</b></p> <p><b>Reporting</b></p> <p><b>1-49.</b> Operators of an existing solvent cleaning machine are required to submit an initial notification to the Administrator no later than 29 August 1995 (40 CFR 63.468(a)).</p> <p><b>1-50.</b> Operators of a new solvent cleaning machine are required to submit an initial notification to the Administrator (40 CFR 63.468(b)).</p> <p><b>1-51.</b> Operators of batch cold solvent cleaning machine are required to submit a compliance report to the Administrator (40 CFR 63.468(c)).</p>	<p>(NOTE: The requirements in 40 CFR 63.460 through 63.469 apply to each individual batch vapor, in-line vapor, in-line cold, and batch cold solvent cleaning machine that uses any solvent containing methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, or chloroform, or any combination of these halogenated HAP solvents, in total concentration greater than 5 percent by weight, as a cleaning and/or drying agent.)</p> <p>Verify that the report is submitted and contains the following information:</p> <ul style="list-style-type: none"> <li>- the name and address of the owner or operator</li> <li>- the address (i.e., physical location) of the solvent cleaning machine</li> <li>- a brief description of each solvent cleaning machine including machine type, solvent/air interface area, and existing controls</li> <li>- the date of the installation for each machine and its control devices or a letter certifying that the machine and its control devices were installed prior to, or after 29 November 1993</li> <li>- the anticipated compliance approach for each machine</li> <li>- an estimate of annual halogenated HAP solvent consumption for each solvent cleaning machine.</li> </ul> <p>Verify that new sources for which construction or reconstruction had commenced and initial startup had not occurred before 2 December 1994 submit the report as soon as practicable but no later than 31 January 1995.</p> <p>Verify that new sources for which construction or reconstruction commenced after 2 December 1994 submit the report as soon as practicable before the construction or reconstruction is planned to commence.</p> <p>Verify that the report is submitted and contains the following information:</p> <ul style="list-style-type: none"> <li>- a brief description of each solvent cleaning machine including machine type, solvent/air interface area, and existing controls</li> <li>- the anticipated compliance approach for each machine</li> <li>- an estimate of annual halogenated HAP solvent consumption for each solvent cleaning machine.</li> </ul> <p>Verify that for existing sources this report is submitted no later than 150 days after 2 December 1997.</p> <p>Verify that for new sources the report is submitted no later than 150 days after startup or 1 May 1995, whichever is later.</p>

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### REGULATORY REQUIREMENTS:

**REVIEWER CHECKS:**  
**July 1995**

**1-51. (continued)**

Verify that the report includes:

- the name and address of the owner or operator
- the address (i.e., physical location) of the solvent cleaning machine
- a statement signed by the owner or operator stating that the solvent cleaning machine for which the report is being submitted is in compliance
- the compliance approach for each machine.

**1-52.** Operators of batch vapor or in-line solvent cleaning machines are required to submit an initial statement of compliance to the Administrator (40 CFR 63.468(d)).

Verify that, for existing sources this report is submitted no later than 150 days after 2 December 1997.

Verify that, for new sources, the report is submitted no later than 150 days after startup or 1 May 1995, whichever is later.

Verify that the report includes:

- the name and address of the owner or operator
- the address (i.e., physical location) of the solvent cleaning machine
- a list of control equipment required to be monitored, a list of the parameters that are monitored and the values of these parameters measured on or during the first month after the compliance date
- conditions to maintain the wind speed requirements
- a test report for machines complying with the idling emission limit standards for tests of idling emissions.

Verify that, if a carbon adsorber is used, the date and results of the weekly measurements of the halogenated HAP solvent concentration is included in the report.

**1-53.** Operators of batch vapor or in-line solvent cleaning machines complying with the alternate standards in 40 CFR 63.464 are required to submit an annual statement of compliance to the Administrator (40 CFR 63.468(e)).

Verify that, for existing sources, this report is submitted no later than 150 days after 2 December 1997.

Verify that, for new sources, the report is submitted no later than 150 days after startup or 1 May 1995, whichever is later.

Verify that the report includes:

- the name and address of the owner or operator
- the address (i.e., physical location) of the solvent cleaning machine
- the solvent/air interface area for cleaning machines without a solvent/air interface, a description of the method used to determine the cleaning capability and the results
- the results of the first 3 mo average emissions calculation.

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>1-54.</b> Operators of batch vapor or in-line solvent cleaning machines are required to submit an annual report by 1 February of the year following the one for which the report is being made and a solvent emissions report (40 CFR 63.468 (f) and 63.468(g)).</p>	<p>Verify that operators of batch vapor or in-line solvent cleaning machines are required to submit an annual report by 1 February of the year following the one for which the report is being made.</p> <p>Verify that the annual report includes the following:</p> <ul style="list-style-type: none"> <li>- a signed statement from the owner or his designee stating that "All operators of solvent cleaning machines have received training on the proper operation of solvent cleaning machines and their control devices sufficient to pass the test in 40 CFR 63.463(d)(10)"</li> <li>- an estimate of solvent consumption for each solvent cleaning machine during the reporting period.</li> </ul> <p>Verify that the solvent emission report is submitted yearly and includes the following information:</p> <ul style="list-style-type: none"> <li>- the size and type of each unit (solvent/air interface area or cleaning capacity)</li> <li>- the average monthly solvent consumption for the solvent cleaning machine in kg/mo</li> <li>- the 3 mo rolling average solvent emission estimates calculated each month.</li> </ul> <p>(NOTE: The annual report and the solvent emissions report can be combined into a single report.)</p>
<p><b>1-55.</b> Exceedances from batch vapor or in-line solvent cleaning machines are required to be reported (40 CFR 63.463(e)(3), 63.468 (h), and 63.468 (i)).</p>	<p>(NOTE: This applies to the control techniques outlined in 40 CFR 63.463(e)(2), see checklist item 1-43.)</p> <p>Verify that all exceedances are reported to the Administrator semiannually except when required more frequently as determined by the administrator.</p> <p>Verify that, once an exceedance has occurred, quarterly reporting is done until a request to reduce reporting is approved.</p> <p>Verify that reports are delivered or postmarked by the 30th day following the end of each calendar half or quarter as appropriate.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<b>1-55. (continued)</b>	<p>Verify that exceedance reports include the following information:</p> <ul style="list-style-type: none"> <li>- actions taken to comply with monitoring and performance test requirements, including records of written or verbal orders for replacement parts, a description of repairs made, and additional monitoring conducted to demonstrate compliance</li> <li>- if an exceedance has occurred, the reason for the exceedance and a description of the actions taken</li> <li>- if no exceedance has occurred and no equipment has been inoperative or out of control, repaired, or adjusted, such information is stated in the report.</li> </ul> <p>(NOTE: Quarterly reporting may be reduced if there has not been an exceedance for a year, all recordkeeping and monitoring requirements are being met, and the Administrator does not object.)</p> <p>(NOTE: An exceedance has occurred if:</p> <ul style="list-style-type: none"> <li>- a reduced room draft is used to achieve compliance and operating conditions under which the wind speed was demonstrated to be 15.2 m/min (50 ft/min) or less have not been established and maintained</li> <li>- a working mode cover is used to achieve compliance and the cover is open for more than just part entrance and removal or it does not completely cover the cleaning machine openings when closed</li> <li>- an idling mode cover is used to achieve compliance and the cover is not in place whenever parts are not in the solvent cleaning machine and it does not completely covers the cleaning machine openings when in place</li> <li>- dwell is used to achieve compliance and neither of the following are done: <ul style="list-style-type: none"> <li>- the appropriate dwell time is determined for each part or parts basket or the maximum dwell time</li> <li>- after cleaning, each part is held in the freeboard area above the vapor zone for the swell time necessary</li> </ul> </li> <li>- a superheated vapor system is used to achieve compliance and: <ul style="list-style-type: none"> <li>- the manufacturers specifications for determining the minimum proper dwell time are not followed</li> <li>- the parts do not remain within the superheated vapor for at least the minimum proper dwell time</li> </ul> </li> <li>- a carbon adsorber in conjunction with a lip exhaust is used to achieve compliance and: <ul style="list-style-type: none"> <li>- the carbon adsorber bed is bypassed during desorption</li> <li>- the lip exhaust is not located above the solvent cleaning machine cover so that the cover closes below the lip exhaust level.)</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
1-55. (continued)	<p>(NOTE: An exceedance has also occurred if the following conditions exist and they have not been corrected within 15 days of detection:</p> <ul style="list-style-type: none"> <li>- freeboard refrigeration devices are used and the chilled air blanket temperature measured at the center of the air blanket is greater than 30 percent of the solvents boiling point</li> <li>- a reduced room draft is used to achieve compliance and the flow or movement of air across the top of the freeboard area of the solvent cleaning machine closure does exceeds 15.2 m/min (50 ft/min) at any time</li> <li>- a working mode cover is used to achieve compliance and it has cracks, holes, or other defects</li> <li>- an idling mode cover is used to achieve compliance and it has cracks, holes, or other defects</li> <li>- a superheated vapor system is used to achieve compliance and the temperature of the vapor at the center of the superheated vapor is at less than 10 °F above the solvents boiling point</li> <li>- a carbon adsorber in conjunction with a lip exhaust is used to achieve compliance, and the concentration of the organic solvent in the exhaust exceeds 100 ppm of any halogenated HAP compound.)</li> </ul>





## Appendix 1-1

### Mandatory Class I Air Quality Areas Under Service Jurisdiction (563 FW 2, Exhibit 1)

Wilderness Area	National Wildlife Refuge
Bering Sea	Alaska Maritime
Simeonof	Alaska Maritime
Tuxedni	Alaska Maritime
Chassahowitzka	Chassahowitzka
St. Marks	St. Marks
Okefenokee	Okefenokee
Wolf Island	Savannah Coastal
Breton	Bogue Chitto
Moosehorn	Moosehorn
Seney	Seney
Mingo	Mingo
Medicine Lake	Medicine Lake
Red Rock Lakes	Red Rock Lakes
UL Bend	Charles M. Russell
Brigantine	Edwin B. Forsythe
Bosque Del Apache	Bosque Del Apache
Salt Creek	Salt Creek
Swanquarter	Mattamuskeet
Lostwood	Lostwood
Wichita Mountains	Wichita Mountains
Cape Romain	Cape Romain



## Appendix 1-2

### Reid Vapor Pressure for Installation Geographic Area (40 CFR 80.27)

State	May	June	July	August	September
Alabama	9.0	7.8	7.8	7.8	7.8
Arizona	9.0	7.8	7.8	7.8	7.8
Arkansas	9.0	7.8	7.8	7.8	7.8
California	9.0	7.8	7.8	7.8	7.8
Colorado*	9.0	7.8	7.8	7.8	7.8
Connecticut	9.0	9.0	9.0	9.0	9.0
Delaware	9.0	9.0	9.0	9.0	9.0
District of Columbia	9.0	7.8	7.8	7.8	7.8
Florida	9.0	7.8	7.8	7.8	7.8
Georgia	9.0	7.8	7.8	7.8	7.8
Idaho	9.0	9.0	9.0	9.0	9.0
Illinois	9.0	9.0	9.0	9.0	9.0
Indiana	9.0	9.0	9.0	9.0	9.0
Iowa	9.0	9.0	9.0	9.0	9.0
Kansas	9.0	7.8	7.8	7.8	7.8
Kentucky	9.0	9.0	9.0	9.0	9.0
Louisiana	9.0	7.8	7.8	7.8	7.8
Maine	9.0	9.0	9.0	9.0	9.0
Maryland	9.0	7.8	7.8	7.8	7.8
Massachusetts	9.0	9.0	9.0	9.0	9.0
Michigan	9.0	9.0	9.0	9.0	9.0
Minnesota	9.0	9.0	9.0	9.0	9.0
Mississippi	9.0	7.8	7.8	7.8	7.8
Missouri	9.0	7.8	7.8	7.8	7.8
Montana	9.0	9.0	9.0	9.0	9.0
Nebraska	9.0	9.0	9.0	9.0	9.0

(continued)

## Appendix 1-2 (continued)

State	May	June	July	August	September
Nevada	9.0	7.8	7.8	7.8	7.8
New Hampshire	9.0	9.0	9.0	9.0	9.0
New Jersey	9.0	9.0	9.0	9.0	9.0
New Mexico	9.0	7.8	7.8	7.8	7.8
New York	9.0	9.0	9.0	9.0	9.0
North Carolina	9.0	7.8	7.8	7.8	7.8
North Dakota	9.0	9.0	9.0	9.0	9.0
Ohio	9.0	9.0	9.0	9.0	9.0
Oklahoma	9.0	7.8	7.8	7.8	7.8
Oregon	9.0	7.8	7.8	7.8	7.8
Pennsylvania	9.0	9.0	9.0	9.0	9.0
Rhode Island	9.0	9.0	9.0	9.0	9.0
South Carolina	9.0	7.8	7.8	7.8	7.8
South Dakota	9.0	9.0	9.0	9.0	9.0
Tennessee					
Knox County	9.0	9.0	9.0	9.0	9.0
All other volatility nonattainment areas	9.0	7.8	7.8	7.8	7.8
Texas	9.0	7.8	7.8	7.8	7.8
Utah	9.0	7.8	7.8	7.8	7.8
Vermont	9.0	9.0	9.0	9.0	9.0
Virginia	9.0	7.8	7.8	7.8	7.8
Washington	9.0	9.0	9.0	9.0	9.0
West Virginia	9.0	9.0	9.0	9.0	9.0
Wisconsin	9.0	9.0	9.0	9.0	9.0
Wyoming	9.0	9.0	9.0	9.0	9.0

\* The standard for 1992 and 1995 in the Denver-Boulder nonattainment area will be 9.0 for 1 June through 15 September.

<sup>1</sup> Standards are expressed in psi.

## Appendix 1-3

### Controlled Substances and Ozone Depletion Weights (40 CFR 82, Appendix A and Appendix B)

Controlled Substance	Ozone Depletion Potential (ODP) Weight
<i>Class I</i>	
<b>Group I</b>	
CFC <sub>13</sub> - Trichlorofluoromethane (CFC-11)	1.0
CF <sub>2</sub> C <sub>12</sub> - Dichlorodifluoromethane (CFC-12)	1.0
C <sub>2</sub> F <sub>3</sub> C <sub>13</sub> - Trichlorotrifluoroethane (CFC-113)	0.8
C <sub>2</sub> F <sub>4</sub> C <sub>12</sub> - Dichlorotetrafluoroethane (CFC-114)	1.0
C <sub>2</sub> F <sub>5</sub> C <sub>1</sub> - (Mono)chloropentafluoroethane (CFC-115)	0.6
All isomers of the above chemicals	
<b>Group II</b>	
CF <sub>2</sub> C <sub>1</sub> Br - Bromochlorodifluoromethane (Halon 1211)	3.0
CF <sub>3</sub> Br - Bromotrifluoromethane (Halon 1301)	10.0
C <sub>2</sub> F <sub>4</sub> Br <sub>2</sub> - Dibromotetrafluoroethane (Halon 2402)	6.0
All isomers of the above chemicals	
<b>Group III</b>	
CF <sub>3</sub> C <sub>1</sub> - Chlorotrifluoromethane (CFC-13)	1.0
C <sub>2</sub> FC <sub>15</sub> - (CFC-111)	1.0
C <sub>2</sub> F <sub>2</sub> C <sub>14</sub> - (CFC-112)	1.0
C <sub>3</sub> FC <sub>17</sub> - (CFC-211)	1.0
C <sub>3</sub> F <sub>2</sub> C <sub>16</sub> - (CFC-212)	1.0
C <sub>3</sub> F <sub>3</sub> Cl <sub>5</sub> - (CFC-213)	1.0
C <sub>3</sub> F <sub>4</sub> C <sub>14</sub> - (CFC-214)	1.0
C <sub>3</sub> F <sub>5</sub> C <sub>13</sub> - (CFC-215)	1.0
C <sub>3</sub> F <sub>6</sub> C <sub>12</sub> - (CFC-216)	1.0
C <sub>3</sub> F <sub>7</sub> C <sub>1</sub> - (CFC-217)	1.0
All isomers of the above chemicals	
<b>Group IV</b>	
CCl <sub>4</sub> - Carbon Tetrachloride	1.1

(continued)

# Appendix 1-3 (continued)

Controlled Substance	Ozone Depletion Potential (ODP) Weight
<b>Group V</b>	
C <sub>2</sub> H <sub>3</sub> Cl <sub>3</sub> -1,1,1-Trichloroethane (Methyl Chloroform)	0.1
All isomers of the above chemicals, except 1,1,2-trichloroethane	
<b>Group VI</b>	
CH <sub>3</sub> Br - Bromomethane (Methyl Bromide)	0.7
<b>Group VII</b>	
CH <sub>2</sub> Br <sub>2</sub>	1.00
CHF <sub>2</sub> Br (HBFC-2201)	0.74
CH <sub>2</sub> FBr	0.73
C <sub>2</sub> H <sub>2</sub> Br <sub>4</sub>	0.3 - 0.8
C <sub>2</sub> HF <sub>2</sub> Br <sub>3</sub>	0.5 - 1.8
C <sub>2</sub> HF <sub>3</sub> Br <sub>2</sub>	0.4 - 1.6
C <sub>2</sub> HF <sub>4</sub> Br	0.7 - 1.2
C <sub>2</sub> H <sub>2</sub> FBr <sub>3</sub>	0.1 - 1.1
C <sub>2</sub> H <sub>2</sub> F <sub>2</sub> Br <sub>2</sub>	0.2 - 1.5
C <sub>2</sub> H <sub>2</sub> F <sub>3</sub> Br	0.7 - 1.6
C <sub>2</sub> H <sub>3</sub> FBr <sub>2</sub>	0.1 - 1.7
C <sub>2</sub> H <sub>3</sub> F <sub>2</sub> Br	0.2 - 1.1
C <sub>2</sub> H <sub>4</sub> FBr	0.07 - 0.1
C <sub>3</sub> HFBr <sub>6</sub>	0.3 - 1.5
C <sub>3</sub> HF <sub>2</sub> Br <sub>5</sub>	0.2 - 1.9
C <sub>3</sub> HF <sub>3</sub> Br <sub>4</sub>	0.3 - 1.8
C <sub>3</sub> HF <sub>4</sub> Br <sub>3</sub>	0.5 - 2.2
C <sub>3</sub> HF <sub>5</sub> Br <sub>2</sub>	0.9 - 2.0
C <sub>2</sub> HF <sub>6</sub> Br	0.7 - 3.3
C <sub>3</sub> H <sub>2</sub> FBr <sub>5</sub>	0.1 - 1.9
C <sub>3</sub> H <sub>2</sub> F <sub>2</sub> Br <sub>4</sub>	0.2 - 2.1
C <sub>3</sub> H <sub>2</sub> F <sub>3</sub> Br <sub>3</sub>	0.2 - 5.6
C <sub>3</sub> H <sub>2</sub> F <sub>4</sub> Br <sub>2</sub>	0.3 - 7.5
C <sub>3</sub> H <sub>2</sub> F <sub>5</sub> Br	0.9 - 1.4
C <sub>3</sub> H <sub>3</sub> FBr <sub>4</sub>	0.08 - 1.9
C <sub>3</sub> H <sub>3</sub> F <sub>2</sub> Br <sub>3</sub>	0.1 - 3.1
C <sub>3</sub> H <sub>3</sub> F <sub>3</sub> Br <sub>2</sub>	0.1 - 2.5
C <sub>3</sub> H <sub>3</sub> F <sub>4</sub> Br	0.3 - 4.4

(continued)

# Appendix 1-3 (continued)

Controlled Substance	Ozone Depletion Potential (ODP) Weight
C <sub>3</sub> H <sub>4</sub> Br <sub>3</sub>	0.03 - 0.3
C <sub>3</sub> H <sub>4</sub> F <sub>2</sub> Br <sub>2</sub>	0.1 - 1.0
C <sub>3</sub> H <sub>4</sub> F <sub>3</sub> Br	0.07 - 0.8
C <sub>3</sub> H <sub>5</sub> Br <sub>2</sub>	0.04 - 0.4
C <sub>3</sub> H <sub>5</sub> F <sub>2</sub> Br	0.07 - 0.8
C <sub>3</sub> H <sub>6</sub> Br	0.02 - 0.7
<i>Class II</i>	
CHFCI <sub>2</sub> - Dichlorofluoromethane (HCFC-21)	*[res.]
CHF <sub>2</sub> Cl - Chlorodifluoromethane (HCFC-22)	0.05
CH <sub>2</sub> FCI - Chlorofluoromethane (HCFC-31)	[res.]
C <sub>2</sub> HFCl <sub>4</sub> - (HCFC-121)	[res.]
C <sub>2</sub> HFCl <sub>2</sub> Cl <sub>3</sub> - (HCFC-122)	[res.]
C <sub>2</sub> HF <sub>3</sub> Cl <sub>2</sub> - (HCFC-123)	0.02
C <sub>2</sub> HF <sub>4</sub> Cl - (HCFC-124)	0.02
C <sub>2</sub> H <sub>2</sub> FCI <sub>3</sub> - (HCFC-131)	[res.]
C <sub>2</sub> H <sub>2</sub> F <sub>2</sub> Cl <sub>2</sub> - (HCFC-132b)	[res.]
C <sub>2</sub> H <sub>2</sub> F <sub>2</sub> Cl - (HCFC-133a)	[res.]
C <sub>2</sub> H <sub>3</sub> FCI <sub>2</sub> - (HCFC-141b)	0.12
C <sub>2</sub> H <sub>3</sub> F <sub>2</sub> Cl - (HCFC-142b)	0.06
C <sub>3</sub> HFCl <sub>6</sub> - (HCFC-221)	[res.]
C <sub>3</sub> HF <sub>2</sub> Cl <sub>5</sub> - (HCFC-222)	[res.]
C <sub>3</sub> HF <sub>3</sub> Cl <sub>4</sub> - (HCFC-223)	[res.]
C <sub>3</sub> HF <sub>4</sub> Cl <sub>3</sub> - (HCFC-224)	[res.]
C <sub>3</sub> HF <sub>5</sub> Cl <sub>2</sub> - (HCFC-225ca)	[res.]
C <sub>3</sub> HF <sub>5</sub> Cl <sub>2</sub> (HCFC-225cb)	[res.]
C <sub>3</sub> HF <sub>6</sub> Cl - (HCFC-226)	[res.]
C <sub>3</sub> H <sub>2</sub> FCI <sub>5</sub> - (HCFC-231)	[res.]
C <sub>3</sub> H <sub>2</sub> F <sub>2</sub> Cl <sub>4</sub> - (HCFC-232)	[res.]
C <sub>3</sub> H <sub>2</sub> F <sub>3</sub> Cl <sub>3</sub> - (HCFC-233)	[res.]
C <sub>3</sub> H <sub>2</sub> F <sub>4</sub> Cl <sub>2</sub> - (HCFC-234)	[res.]
C <sub>3</sub> H <sub>2</sub> F <sub>5</sub> Cl - (HCFC-235)	[res.]
C <sub>3</sub> H <sub>3</sub> FCI <sub>4</sub> - (HCFC-241)	[res.]
C <sub>3</sub> H <sub>3</sub> F <sub>2</sub> Cl <sub>3</sub> - (HCFC-242)	[res.]
C <sub>3</sub> H <sub>3</sub> F <sub>3</sub> Cl <sub>2</sub> - (HCFC-243)	[res.]
C <sub>3</sub> H <sub>3</sub> F <sub>4</sub> Cl - (HCFC-244)	[res.]

(continued)

### Appendix 1-3 (continued)

Controlled Substance	Ozone Depletion Potential (ODP) Weight
$C_3H_4FCl_3$ - (HCFC-251)	[res.]
$C_3H_4F_2Cl_2$ - (HCFC-252)	[res.]
$C_3H_4F_3Cl$ - (HCFC-253)	[res.]
$C_3H_5FCl_2$ - (HCFC-261)	[res.]
$C_3H_5F_2Cl$ - (HCFC-262)	[res.]
$C_3H_6FCl$ - (HCFC-271)	[res.]
All isomers of the above chemicals	[res.]

\*[res.] means reserve. It designates that the ozone depletion weight number has been reserved for a future rating.



## Appendix 1-4

### Acceptable Substitutes (40 CFR 82.170 through 82.194)

REFRIGERANTS: ACCEPTABLE SUBSTITUTES			
End use	Substitute	Decision	Comments
R-500 Centrifugal Chillers (Retrofit)	R-406A	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
R-500 Centrifugal Chillers *New Equipment/ NIKs)	R-406A	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
CFC-11, CFC-12, R-502 Industrial Process Refrigeration (Retrofit)	HCFC-123	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
	R-406A	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
	R-407A	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	R-407B	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	HCFC Blend Epsilon	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
CFC-11, CFC-12, R-502 Industrial Process Refrigeration (New Equipment/ NIKs)	HCFC-123	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
	R-407A	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	R-407B	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
CFC-13, R-1381, R-503 Industrial Process Refrigeration (New Equipment/ NIKs)	HFC-23	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	R-403B	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	PFC Blend Alpha	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.

(continued)

## Appendix 1-4 (continued)

REFRIGERANTS: ACCEPTABLE SUBSTITUTES			
End use	Substitute	Decision	Comments
CFC-12, R-502 Ice Skating Rinks (retrofit and New)	R-407A	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	R-407B	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
CFC-12, R-502 Cold Storage Warehouses (Retrofit)	R-406A	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
	R-407A	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
CFC-12, R-502 Cold Storage Warehouses (Retrofit) (continued)	R-407B	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	HCFC Blend Epsilon	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
CFC-12, R-502 Cold Storage Warehouses (New Equipment/NIKs)	R-407A	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	R-407B	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
CFC-12, R-500, R-502 Refrigerated Transport (Retrofit)	R-406A	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
	R-407A	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	R-407B	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	HCFC Blend Gamma	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
	HCFC Blend Epsilon	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
CFC-12, R-500, Refrigerated Transport (New Equipment/NIKs)	R-407A	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	R-407B	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.

(continued)

## Appendix 1-4 (continued)

REFRIGERANTS: ACCEPTABLE SUBSTITUTES			
End use	Substitute	Decision	Comments
CFC-12, R-502 Retail Food Refrigeration (Retrofit)	R-406A	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
	R-407A	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	R-407B	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	HCFC Blend Gamma	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
	HCFC Blend Epsilon	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
CFC-12, R-502 Retail Food Refrigeration (New Equipment/NIKs)	R-407A	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	R-407B	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
CFC-12, R-502 Commercial Ice Machines (Retrofit)	R-406A	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
	R-407A	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	R-407B	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	HCFC Blend Gamma	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
	HCFC Blend Epsilon	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
CFC-12, R-502 Commercial Ice Machines (New Equipment/NIKs)	R-407A	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	R-407B	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.

(continued)

## Appendix 1-4 (continued)

REFRIGERANTS: ACCEPTABLE SUBSTITUTES			
End use	Substitute	Decision	Comments
CFC-12 Vending Machines (Retrofit)	R-404A	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	R-406A	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
	R-507	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	HCFC Blend Gamma	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
CFC-12 Vending Machines (New Equipment/NIKs)	R-404A	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	R-507	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
CFC-12 Water Coolers (Retrofit)	R-406A	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
	HCFC Blend Gamma	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
CFC-12 Household Refrigerators (retrofit)	R-406A	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
	HCFC Blend Gamma	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
CFC-12, R-502 Household Freezers (Retrofit)	R-402A	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
	R-402B	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
	R-404A	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	R-406A	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
	R-507	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	HCFC Blend Gamma	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.

(continued)

## Appendix 1-4 (continued)

REFRIGERANTS: ACCEPTABLE SUBSTITUTES			
End use	Substitute	Decision	Comments
CFC-12, R-502 Household Freezers (New Equipment/ NIKs)	R-402A	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
	R-402B	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
	R-404A	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	R-507	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
CFC-12, Residential Dehumidifiers (Retrofit)	R-406A	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
	HCFC Blend Gamma	Acceptable	This substitute is subject to containment and recovery regulations covering HCFCs.
CFC-12 Non-Automobile Motor Vehicle Air conditioners (Retrofit and New)	HCFC-22	Acceptable	HCFC-22 may damage automobile air conditioning systems, which is why it is only acceptable for nonautomotive use. This substitute is subject to containment and recovery regulations covering HCFCs.
CFC-113, R-1381, and R-503 Very Low Temperature Refrigeration (Retrofit and New Equipment/ NIKs)	HFC-23	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	R-403B	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.
	PFC Blend Alpha	Acceptable	USEPA strongly recommends the containment and reclamation of this substitute.

(continued)

## Appendix 1-4 (continued)

SUBSTITUTES ACCEPTABLE SUBJECT TO NARROWED USE LIMITS			
End use	Substitute	Decision	Comments
Electronics cleaning w/ CFC-113, MCF	Perfluorocarbons (C5F12, C6F12, C6F14, C7F16, C8F18, C5F11NO, C6F13NO, C7F15NO, and C8F16).	Acceptable for high-performance, precision-engineered applications only where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements.	<p>The principle environmental characteristic of concern for perfluorocarbons (PFC) is that they have long atmospheric lifetimes and high global warming potentials. Although actual contributions to global warming depend upon the quantities of PFCs emitted, the effects are for practical purposes irreversible.</p> <p>Users must observe this limitation on PFC acceptability by conducting a reasonable evaluation of other substitutes to determine that PFC use is necessary to meet performance or safety requirements. Documentation of this evaluation must be kept on file.</p> <p>For additional guidance regarding applications in which PFCs may be appropriate, users should consult the Preamble for this rulemaking.</p>
Precision cleaning w/ CFC-113, MCF	Perfluoro-carbons (C5F12, C6F12, C6F14, C7F16, C8F18, C5F11NO, C6F13NO, C7F15NO, and C8F16).	Acceptable for high-performance, precision-engineered applications only where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements.	<p>The principle environmental characteristic of concern for PFCs is that they have long atmospheric lifetimes and high global warming potentials. Although actual contributions to global warming depend upon the quantities of PFCs emitted, the effects are for practical purposes irreversible.</p> <p>Users must observe this limitation on PFC acceptability by conducting a reasonable evaluation of other substitutes to determine that PFC use is necessary to meet performance or safety requirements. Documentation of this evaluation must be kept on file.</p> <p>For additional guidance regarding applications in which PFCs may be appropriate, users should consult the Preamble for this rulemaking.</p>

(continued)

# Appendix 1-4 (continued)

FIRE SUPPRESSION AND EXPLOSION PROTECTION STREAMING AGENTS				
End use	Substitute	Decision	Conditions	Comments
Halon 1211 Streaming Agents	[CFC Blend]	Acceptable in nonresidential uses only		<p>Use of CFCs are controlled under CAA section 610 which bans use of CFCs in pressurized dispensers, and therefore are not permitted for use in portable for extinguishers. USEPA will list this agent as proposed unacceptable in the next significant new alternatives policy (SNAP) proposed rulemaking. Because CFCs are a Class I substance, production will be phased out by 1 January 1996.</p> <p>See footnotes 1, 2.</p>
	HBFC-22B1		Acceptable in nonresidential uses only.	<p>Proper procedures regarding the operation of the extinguisher and ventilation following dispensing the extinguishant is recommended. Worker exposure may be a concern in small office areas. HBFC-22B1 is considered an interim substitute for Halon 1211. Because the HBFC22B1 has an ozone-depleting potential (ODP) of 0.74, production will be phased out (except for essential uses) on 1 January 1996. This agent was submitted to the agency as a premanufacture notice (PMN) and is presently subject to requirements contained in a <i>Toxic Substance Control Act</i> (TSCA) Consent Order. See footnotes 1, 2.</p>
	C <sub>6</sub> F <sub>14</sub>	<p>Acceptable for nonresidential uses where other alternatives are not technically feasible due to performance or safety requirements:</p> <p>a. due to the physical or chemical properties of the agent, or</p>		<p>Users must observe the limitations on PFC acceptability by making reasonable effort to undertake the following measures:</p> <ul style="list-style-type: none"> <li>(i) conduct an evaluation of foreseeable conditions of end use</li> <li>(ii) determine that the physical or chemical properties or other technical constraints of the other available agents preclude their use and</li> <li>(iii) determine that human exposure to the other alternative extinguishing agents may approach or result in cardiosensitization or other unacceptable toxicity effects under normal operating conditions</li> </ul> <p>Documentation of such measures must be available for review upon request.</p>

(continued)

## Appendix 1-4 (continued)

FIRE SUPPRESSION AND EXPLOSION PROTECTION STREAMING AGENTS (continued)				
End use	Substitute	Decision	Conditions	Comments
Halon 1211 Streaming Agents (continued)		b. where human exposure to the extinguishing agent may approach cardiotoxicity levels or result in other unacceptable health effects under normal operating conditions.		<p>The principal environmental characteristic of concern for PFCs is that they have high global warming potential (GWP) and long atmospheric lifetimes. Actual contributions to global warming depend upon the quantities of PFCs emitted.</p> <p>For additional guidance regarding applications in which PFCs may be appropriate, users should consult the description of potential uses, which is included in the preamble to this rulemaking.</p> <p>See footnotes 1, 2.</p>
	HCFC-124	Acceptable		This agent is banned in residential applications per section 610(d) of CAAA90.
	[HCFC Blend] C	Acceptable		This agent is banned in residential applications per section 610(d) of CAAA90.
	[HCFC Blend] D	Acceptable		The intended market for this agent is Large, outdoor applications. This agent is banned in residential applications per section 610(d) of CAAA90.
	Gelled Hydrocarbon/Dry Chemical Suspension	Acceptable		This agent was formerly identified as Powdered Aerosol B.

**Footnotes:**

1. Discharge testing and training should be strictly limited only to that which is essential to meet safety or performance requirements.
2. The agent should be recovered from the fire protection system in conjunction with testing or servicing and recycled for later use or destroyed.

(continued)



## Appendix 1-4 (continued)

FIRE SUPPRESSION AND EXPLOSION PROTECTION TOTAL FLOODING AGENTS				
End use	Substitute	Decision	Conditions	Comments
Halon 1301 Total Flooding Agents.	HBFC-22B1	Acceptable	<p>Until OSHA establishes applicable workplace requirements: Where egress from an area cannot be accomplished within 1 min, the employer shall not use this agent in concentrations exceeding its cardiotoxic NOAEL of 0.3%.</p> <p>Where egress takes longer than 30 s but less than 1 min, the employer shall not use the agent in a concentration greater than its cardiotoxic LOAEL of 1.0%.</p> <p>HBFC-22B1 concentrations greater than 1.0% are only permitted in areas not normally occupied by employees provided that any employee in the area can escape within 30 s. The employer shall assure that no unprotected employees enter the area during agent discharge.</p>	<p>The comparative design concentration based on cup burner values is approximately 5.3%; while its cardiotoxic LOAEL is 1%. Thus, it is unlikely that this agent will be used in normally occupied areas.</p> <p>HBFC-22B1 can be considered only an interim substitute for Halon 1301. HBFC-22B1 has an ODP of 0.74; thus, production will be phased out January 1, 1996.</p> <p>This agent was submitted to the agency as a premanufacture notice (PMN) and is presently subject to requirements contained in a TSCA Consent Order.</p> <p>See footnotes 1, 2, 3, 4.</p>

## Appendix 1-4 (continued)

FIRE SUPPRESSION AND EXPLOSION PROTECTION TOTAL FLOODING AGENTS				
End use	Substitute	Decision	Conditions	Comments
	HCFC-22	Acceptable	<p>Until OSHA establishes applicable workplace requirements:</p> <p>Where egress from an area cannot be accomplished within 1 min, the employer shall not use this agent in concentrations exceeding its cardiotoxic NOAEL of 2.5%.</p> <p>Where egress takes longer than 30 s but less than 1 min, the employer shall not use the agent in a concentration greater than its cardiotoxic LOAEL of 5.0%.</p> <p>HCFC-22 concentrations greater than 5.0% are permitted only in areas not normally occupied by employees provided that any employee in the area can escape within 30 s. The employer shall assure that no unprotected employees enter the area during agent discharge.</p>	<p>The comparative design concentration based on cup burner values is approximately 13.9% while its cardiotoxic LOAEL is 5.0%. Thus, it is unlikely that this agent will be used in normally occupied areas.</p> <p>See footnotes 1, 2 3, 4.</p>

(continued)

# Appendix 1-4 (continued)

FIRE SUPPRESSION AND EXPLOSION PROTECTION TOTAL FLOODING AGENTS (continued)				
End use	Substitute	Decision	Conditions	Comments
	HCFC-124	Acceptable	<p>Until OSHA establishes applicable workplace requirements:</p> <p>Where egress from an area cannot be accomplished within 1 min, the employer shall not use this agent in concentrations exceeding its cardiotoxic NOAEL of 1.0%.</p> <p>Where egress takes longer than 30 s but less than 1 min, the employer shall not use the agent in a concentration greater than its cardiotoxic LOAEL OF 2.5%.</p> <p>HCFC-123 concentrations greater than 2.5% are only permitted in areas not normally occupied by employees provided that any employee in the area can escape within 30 s. The employer shall assure that no unprotected employees enter the area during agent discharge.</p>	<p>The comparative design concentration based on cup burner values is approximately 8.4%; while its cardiotoxic LOAEL is 2.5%. Thus, it is unlikely that this agent will be used in normally occupied areas.</p> <p>See footnotes 1, 2, 3, 4.</p>
	[HCFC BLEND] A	Acceptable	<p>Until OSHA establishes applicable workplace requirements:</p> <p>Where egress from an area cannot be accomplished within 1 min, the employer shall not use [HCFC Blend] A in concentrations exceeding its cardiotoxic NOAEL of 10.0%.</p> <p>Where egress takes greater than 30 s but less than 1 min, the employer shall not use [HCFC Blend] A in a concentration greater than its cardiotoxic LOAEL of 10.0%.</p> <p>[HCFC Blend] A concentrations greater than 10 percent are permitted only in areas not normally occupied by employees provided that any employee in the area can escape within 30 s. The employer shall assure that no unprotected employees enter the area during agent discharge.</p>	<p>The comparative design concentration based on full-scale testing is approximately 8.6%.</p> <p>The agent should be recovered from the fire protection system in conjunction with testing or servicing, and should be recycled for later use or destroyed.</p> <p>See footnotes 1, 2, 3, 4.</p>

(continued)

# Appendix 1-4 (continued)

FIRE SUPPRESSION AND EXPLOSION PROTECTION TOTAL FLOODING AGENTS (continued)				
End use	Substitute	Decision	Conditions	Comments
	HFC-23	Acceptable	<p>Until OSHA establishes applicable workplace requirements: Where egress from an area cannot be accomplished within 1 min, the employer shall not use HFC-23 in concentrations exceeding 30%.</p> <p>Where egress takes greater than 30 s but less than 1 min, the employer shall not use HFC-23 in a concentration greater than 50.0%.</p> <p>HFC-23 concentrations greater than 50 percent are only permitted in areas not normally occupied by employees provided that any employee in the area can escape within 30 s. The employer shall assure that no unprotected employees enter the area during agent discharge.</p> <p>The design concentration must result in an oxygen level of at least 16%.</p>	<p>The comparative design concentration based on cup burner values is approximately 14.4%; while data indicates that its cardiotoxicity NOAEL is 30% without added oxygen and 50% with added oxygen. Its LOAEL is likely to exceed 50%.</p> <p>See footnotes 1, 2, 3, 4.</p>
	HFC-125	Acceptable	<p>Until OSHA establishes applicable workplace requirements: Where egress from an area cannot be accomplished within 1 min, the employer shall not use this agent in concentrations exceeding its cardiotoxic NOAEL of 7.5%.</p> <p>Where egress takes longer than 30 s but less than 1 min, the employer shall not use the agent in a concentration greater than its cardiotoxic LOAEL of 10.0%.</p> <p>HFC-125 concentrations greater than 10.0% are only permitted in areas not normally occupied by employees provided that any employee in the area can escape within 30 s. The employer shall assure that no unprotected employees enter the area during agent discharge.</p>	<p>The comparative design concentration based on cup burner values is approximately 11.3%; while its cardiotoxic LOAEL is 10.0%. Thus, it is unlikely that this agent will be used in normally occupied areas.</p> <p>See footnotes 1, 2, 3, 4.</p>

(continued)

## Appendix 1-4 (continued)

FIRE SUPPRESSION AND EXPLOSION PROTECTION TOTAL FLOODING AGENTS (continued)				
End use	Substitute	Decision	Conditions	Comments
	HFC-134a	Acceptable	<p>Until OSHA establishes applicable workplace requirements: Where egress from an area cannot be accomplished within 1 min, the employer shall not use this agent in concentrations exceeding its cardiotoxic NOAEL of 4.0%.</p> <p>Where egress takes longer than 30 s but less than 1 min, the employer shall not use the agent in a concentration greater than its cardiotoxic LOAEL of 8.0% HFC-134a concentrations greater than 8.0% are only permitted in areas not normally occupied by employees provided that any employee in the area can escape within 30 s. The employer shall assure that no unprotected employees enter the area during agent discharge.</p>	<p>The comparative design concentration based on cup burner values is approximately 12.6%; while its cardiotoxic LOAEL is 8.0%. Thus, it is unlikely that this agent will be used in normally occupied areas. See footnotes 1, 2, 3, 4.</p>
	HFC-227ea	Acceptable	<p>Until OSHA establishes applicable workplace requirements: Where egress from an area cannot be accomplished within 1 min, the employer shall not use HFC-227ea in concentrations exceeding its cardiotoxic NOAEL of 9.0%.</p> <p>Where egress takes longer than 30 s but less than 1 min, the employer shall not use the agent in a concentration greater than its cardiotoxic LOAEL of 10.5%.</p> <p>HFC-227ea concentrations greater than 10.5% are only permitted in areas not normally occupied by employees provided that any employee in the area can escape within 30 s. The employer shall assure that no unprotected employees enter the area during agent discharge.</p>	<p>The comparative design concentration based on cup burner values is approximately 7.0%; while data indicate that its cardiotoxicity LOAEL is probably greater than 10.5%. USEPA is accepting 10.5% as its LOAEL. This agent was submitted to the agency as a premanufacture notice (PMN) agent and is presently subject to requirements contained in a TSCA Significant New Use Rule (SNUR). See footnotes 1, 2, 3, 4.</p>

(continued)

## Appendix 1-4 (continued)

FIRE SUPPRESSION AND EXPLOSION PROTECTION TOTAL FLOODING AGENTS (continued)				
End use	Substitute	Decision	Conditions	Comments
	C <sub>4</sub> F <sub>10</sub>	<p>Acceptable where other alternatives are not technically feasible due to performance or safety requirements:</p> <p>a. due to their physical or chemical properties, or</p> <p>b. where human exposure to the extinguishing agents may approach cardiosensitization levels or result in other unacceptable health effects under normal operating conditions.</p>	<p>Until OSHA establishes applicable workplace requirements:</p> <p>For occupied areas from which personnel cannot be evacuated in 1 min, use is permitted only up to concentrations not exceeding the cardiotoxicity NOAEL of 40%.</p> <p>Although no LOAEL has been established for this product, standard OSHA requirements apply, i.e., for occupied areas from which personnel can be evacuated or egress can occur between 30 and 60 s, use is permitted up to a concentration not exceeding the LOAEL.</p> <p>All personnel must be evacuated before concentration of C<sub>4</sub>F<sub>10</sub> exceeds 40%.</p> <p>Design concentration must result in oxygen levels of at least 16%.</p> <p>Documentation of such measures must be available for review upon request.</p>	<p>The comparative design concentration based on cup burner values is approximately 6.6%. Users must observe the limitations on PFC acceptability by making reasonable efforts to undertake the following measures:</p> <p>(i) conduct an evaluation of foreseeable conditions of end use</p> <p>(ii) determine that human exposure to the other alternative extinguishing agents may approach or result in cardiosensitization or other unacceptable toxicity effects under normal operating conditions</p> <p>(iii) determine that the physical or chemical properties or other technical constraints of the other available agents preclude their use.</p> <p>The principal environmental characteristic of concern for PFCs is that they have high GWPs and long atmospheric lifetimes. Actual contributions to global warming depend upon the quantities of PFCs emitted.</p> <p>For additional guidance regarding applications in which PFCs may be appropriate, users should consult the description of potential uses that is included in this rulemaking.</p> <p>See footnotes 1, 2, 3, 4.</p>

(continued)

## Appendix 1-4 (continued)

FIRE SUPPRESSION AND EXPLOSION PROTECTION TOTAL FLOODING AGENTS (continued)				
End use	Substitute	Decision	Conditions	Comments
	[IG-541]	Acceptable	<p>Until OSHA establishes applicable workplace requirements:</p> <p>The design concentration must result in at least 10% oxygen and no more than 5% CO<sub>2</sub>.</p> <p>If the oxygen concentration of the atmosphere falls below 10%, personnel must be evacuated and egress must occur within 30 s.</p>	<p>Studies have shown that healthy, young individuals can remain in a 10% to 12% oxygen atmosphere for 30 to 40 min without impairment. However, in a fire emergency, the oxygen level may be reduced below safe levels, and the combustion products formed by the fire are likely to cause harm. Thus, the agency does not contemplate personnel remaining in the space after system discharge during a fire without self Contained breathing apparatus (SCBA) as required by OSHA.</p> <p>See footnotes 1, 2.</p>

**Footnotes:**

1. Must conform with OSHA 29 CFR 1910 Subpart L Section 1910.160 of the U.S. Code.
2. Per OSHA requirements, protective gear (SCBA) must be available in the event personnel must reenter the area.
3. Discharge testing should be strictly limited only to that which is essential to meet safety or performance requirements.
4. The agent should be recovered from the fire protection system in conjunction with testing or servicing, and recycled for later use or destroyed.

(continued)

## Appendix 1-4 (continued)

Fire Suppression And Explosion Protection Total Flooding Agents Substitutes Acceptable Subject to Narrowed Use Limits				
End use	Substitute	Decision	Conditions	Comments
Halon 1301 Total Flood- ing Agents.	C <sub>4</sub> F <sub>10</sub>	Acceptable where other alternatives are not technically feasible due to performance or safety requirements: a. due to their physical or chemical properties, or b. where human exposure to the extinguishing agents may approach cardiosensitization levels or result in other unacceptable health effects under normal operating conditions.	Until OSHA establishes applicable workplace requirement: For occupied areas from which personnel cannot be evacuated in 1 min, use is permitted only up to concentrations not exceeding the cardiotoxicity NOAEL of 40%.  Although no LOAEL has been established for this product, standard OSHA requirements apply, i.e., for occupied areas from which personnel can be evacuated or egress can occur between 30 and 60 s, use is permitted up to a concentration not exceeding the LOAEL.  All personnel must be evacuated before concentration of C <sub>4</sub> F <sub>10</sub> exceeds 40%. Design concentration must result in oxygen levels of at least 16%.	The comparative design concentration based on cup burner values is approximately 6.6%. Users must observe the limitations on PFC approval by undertaking the following measures:  (i) conduct an evaluation of foreseeable conditions of end use (ii) determine that human exposure to the other alternative extinguishing agents may approach or result in cardiosensitization or other unacceptable toxicity effects under normal operating conditions, and (iii) determine that the physical or chemical properties or other technical constraints of the other available agents preclude their use.  Documentation of such measures must be available for review upon request.  The principal environmental characteristic of concern for PFCs is that they have high GWPs and long atmospheric lifetimes. Actual contributions to global warming depend upon the quantities of PFCs emitted.  For additional guidance regarding applications in which PFCs may be appropriate, users should consult the description of potential uses which is included in the preamble to this rulemaking.  See footnotes 1, 2, 3, 4.

### Footnotes:

1. Must conform with OSHA 29 CFR 1910 Subpart L Section 1910.160 of the U.S. Code.
2. Per OSHA requirements, protective gear (SCBA) must be available in the event personnel must reenter the area.
3. Discharge testing should be strictly limited only to that which is essential to meet safety or performance requirements.
4. The agent should be recovered from the fire protection system in conjunction with testing or servicing, and recycled for later use or destroyed.

(continued)



## Appendix 1-4 (continued)

FOAM SECTOR: ACCEPTABLE SUBSTITUTES			
End use	Substitute	Decision	Comments
CFC-11 Rigid Polyurethane and Polyisocyanurate Laminated Boardstock	Electroset Technology	Acceptable	Proprietary Technology
CFC-11 Polyurethane, Rigid Appliance.	Electroset Technology	Acceptable	Proprietary Technology
CFC-11 Polyurethane, Rigid Commercial	Electroset Technology	Acceptable	Proprietary Technology
CFC-11 Polyurethane, Rigid Slabstock and other.	Electroset Technology	Acceptable	Proprietary Technology
CFC-12 Polystyrene, Extruded Boardstock and Billet	HCFC-143a	Acceptable	HCFC-143a has the highest GWP of those substitutes acceptable for the end use.
	Electroset Technology	Acceptable	Proprietary Technology
CFC-11, CFC-113 Phenolic, insulation board	Electroset Technology	Acceptable	Proprietary Technology
CFC-11 Polyurethane, Flexible	Electroset Technology	Acceptable	Proprietary Technology
	Saturate Light Hydrocarbons C3-C6	Acceptable	Flammability may be an issue for the manufacture and transport of products, Hydrocarbons are VOCs and are subject to control under Title I of the CAAA90.
CFC-11 Polyurethane, integral Skin	Electroset Technology	Acceptable	Proprietary Technology

## Appendix 1-4 (continued)

FOAM SECTOR: ACCEPTABLE SUBSTITUTES			
End use	Substitute	Decision	Comments
CFC-12, Polystyrene, Extruded Sheet	Saturated Light Hydrocarbons C3-C6.	Acceptable	Flammability may be an issue for the manufacture and transport of products, Hydrocarbons are VOCs and are subject to control under Title I of the CAAA90.
	Electroset Technology	Acceptable	
CFC-12, CFC-114, CFC-11 Polyolefin	Methylene Chloride	Acceptable	Revised OSHA PELs have been proposed at 25 ppm (TWA) for methylene chloride (11/7/91), subject to meeting all future ambient air controls for hazardous air pollutants under Title II section 112 of the CAAA90, RCRA standards must be met.
	HFC-152a/Saturated Light Hydrocarbons	Acceptable	
	Chemical Blend A	Acceptable	Flammability may be an issue for the manufacture and transport of products, Major sources of VOC emissions are subject to the New Source Review (NSR) program.
	Electroset Technology	Acceptable	Proprietary Technology Proprietary Technology

SOLVENTS: ACCEPTABLE SUBSTITUTES			
End use	Substitute	Decision	Comments
Metals Cleaning with CFC-113, MCF	Trans-1,2-dichloroethylene.	Acceptable	Octamethylcyclotetrasiloxanes and decamethylcyclopentasiloxanes are acceptable alternatives. Evaluation of other VMSs is ongoing.
	Volatile Methyl Siloxanes	Acceptable	
Electronics Cleaning with CFC-113, MCF	Trans-1,2-dichloroethylene.	Acceptable	Octamethylcyclotetrasiloxanes and decamethylcyclopentasiloxanes are acceptable alternatives. Evaluation of other VMSs is ongoing.
	Volatile Methyl Siloxanes	Acceptable	

(continued)

## Appendix 1-4 (continued)

SOLVENTS: ACCEPTABLE SUBSTITUTES			
End use	Substitute	Decision	Comments
Precision Cleaning with CFC-113, MCF	Trans-1,2-dichloro-ethylene.	Acceptable	<p>New Toxicity data has led to an upward revision of the company set workplace exposure limit (AEL) of 30 ppm. the Agency believes that under normal conditions of use, this limit is acceptable.</p> <p>Octamethylcyclotetrasiloxanes and decamethylcyclopentasiloxanes are acceptable alternatives. Evaluation of other VMSs is ongoing.</p>
	HCFC-123	Acceptable	
	Volatile Methyl Siloxanes	Acceptable	

STERILANTS: ACCEPTABLE SUBSTITUTES			
End use	Substitute	Decision	Comments
12/88 Blend of EIO/CFC-12 Sterilant	[HCFC Blend] A	Acceptable	This agent has received FIFRA registration.

AEROSOLS: ACCEPTABLE SUBSTITUTES			
End use	Substitute	Decision	Comments
CFC-11, CFC-113, MCF, HCFC-141b as aerosol solvents.	Trans-1,2-dichloro-ethylene.	Acceptable	



## Appendix 1-5

### Unacceptable CFC and Halon Substitutes (40 CFR 82.170 through 82.194, Appendix A)

End Use	Substitute	Decision	Comments
Metals cleaning w/CFC-113	HCFC 141b and its blends	Unacceptable	High ODP; other alternatives exist. Effective date: As of 30 days after final rule for uses in new equipment (including retrofits made after the effective date); as of 1 January 1996 for uses in existing equipment. USEPA will grant, if necessary, narrowed use acceptability listings for CFC-113 past the effective date of the prohibition.
Metals cleaning w/MCF	HCFC 141b and its blends	Unacceptable	High ODP; other alternatives exist. Effective date: As of 30 days after final rule for uses in new equipment (including retrofits made after the effective date); as of 1 January 1996 for uses in existing equipment.
Electronics cleaning w/CFC-113	HCFC 141b and its blends	Unacceptable	High ODP; other alternatives exist. Effective date: As of 30 days after final rule for uses in new equipment (including retrofits made after the effective date); as of 1 January 1996 for uses in existing equipment. USEPA will grant, if necessary, narrowed use acceptability listings for CFC-113 past the effective date of the prohibition.
Electronics cleaning w/MCF	HCFC 141b and its blends	Unacceptable	High ODP; other alternatives exist. Effective date: As of 30 days after final rule for uses in new equipment (including retrofits made after the effective date); as of 1 January 1996 for uses in existing equipment.
Precision Cleaning w/CFC-113	HCFC 141b and its blends	Unacceptable	High ODP; other alternatives exist. Effective date: As of 30 days after final rule for uses in new equipment (including retrofits made after the effective date); as of 1 January 1996 for uses in existing equipment. USEPA will grant, if necessary, narrowed use acceptability listings for CFC-113 past the effective date of the prohibition.
Precision Cleaning w/MCF	HCFC 141b and its blends	Unacceptable	High ODP; other alternatives exist. Effective date: As of 30 days after final rule for uses in new equipment (including retrofits made after the effective date); as of 1 January 1996 for uses in existing equipment.
<b>Refrigerants</b>			
CFC-11 centrifugal chillers (retrofit).	HCFC-141b	Unacceptable	Has a high ODP relative to other alternatives.
CFC-12 centrifugal chillers (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.

(continued)

## Appendix 1-5 (continued)

End Use	Substitute	Decision	Comments
CFC-11, CFC-12, CFC-113, CFC-114, R-500 centrifugal chillers (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
	HCFC-141b	Unacceptable	Has a high ODP relative to other alternatives.
CFC-12 reciprocating chillers (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 reciprocating chillers (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-11, CFC-12, R-502 industrial process refrigeration (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
CFC-11, CFC-12, R-502 industrial process refrigeration (new equipment/NIKs)	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
CFC-12, R-502 ice skating rinks (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 ice skating rinks (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 cold storage warehouses (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 cold storage warehouses (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-500, R-502 refrigerated transport (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.

(continued)

## Appendix 1-5 (continued)

End Use	Substitute	Decision	Comments
CFC-12, R-500,R-502 refrigerated transport (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 retail food refrigeration (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 retail food refrigeration (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 commercial ice machines (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 commercial ice machines (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 vending machines (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 vending machines (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 water coolers (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 water coolers (new equipment/NIKs)	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.

(continued)

## Appendix 1-5 (continued)

End Use	Substitute	Decision	Comments
CFC-12 household refrigerators (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 household refrigerators (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 household freezers (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 household freezers (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-500 residential dehumidifiers (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-500 residential dehumidifiers (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 motor vehicle air conditioners (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 motor vehicle air conditioners (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.

(continued)



## Appendix 1-5 (continued)

End Use	Substitute	Decision	Comments
<b>Foams</b>			
CFC-11 Polyolefin	HCFC-141b (or blends thereof)	Unacceptable	HCFC-141b has an ODP of 0.11, almost equivalent to that of methyl chloroform, a Class I substance. The Agency believes that non-ODP alternatives are sufficiently available to render the use of HCFC-141b unnecessary in polyolefin foams.
<b>Fire Suppression and Explosion Protection Streaming Agents</b>			
Halon 1211 Streaming Agents	[CFC-11]	Unacceptable	This agent has been suggested for use on large outdoor fires for which nonozone depleting alternatives are currently used.



## Appendix 1-6

### Required Levels of Evacuation for Appliances (Except for small appliances, MVACS, and MVAC-like appliances) (40 CFR 82.156, Table 1)

Type of Appliance	Using recovery or recycling equipment manufactured or imported before 15 November 1993	Using recovery or recycling equipment manufactured or imported on or after 15 November 1993
HCFC-22 appliance, or isolated component of such appliance, normally containing less than 200 lb of refrigerant	0	0
HCFC-22 appliance, or isolated component of such appliance, normally containing less than 200 lb of refrigerant	0	0
HCFC-22 appliance, or isolated component of such appliance, normally containing 200 lb or more of refrigerant	4	10
Other high-pressure appliance, or isolated component of such appliance, normally containing less than 200 lb of refrigerant	4	10
Other high-pressure appliance, or isolated component of such appliance, normally containing 200 lb or more of refrigerant	4	15
Very high-pressure appliance	0	0
Low-pressure appliance	25	25 mm Hg absolute



## Appendix 1-7

### Emission Limits for Cleaning Machines Without a Solvent/Air Interface (40 CFR 63.464(a)(2)(ii)(A))

#### Equation 1

$$EL = 330 \cdot (Vol)^{0.6} \cdot (1)$$

EL = the 3 mo rolling average  
monthly emissions limit (kg/mo)

Vol = the cleaning capacity of the  
solvent cleaning machine (m<sup>3</sup>)

Table 1

Cleaning Capacity (m <sup>3</sup> )	3 mo rolling average monthly emission limit (kg/mo)
0.00	0
0.05	55
0.10	83
0.15	106
0.20	126
0.25	144
0.30	160
0.35	176
0.40	190
0.45	204
0.50	218
0.55	231
0.60	243
0.65	255

(continued)

**Appendix 1-7 (continued)**

<b>Cleaning Capacity (m<sup>3</sup>)</b>	<b>3 mo rolling average monthly emission limit (kg/mo)</b>
0.70	266
0.75	278
0.80	289
0.85	299
0.90	310
0.95	320
1.00	330
1.05	340
1.10	349
1.15	359
1.20	368
1.25	377
1.30	386
1.35	395
1.40	404
1.45	412
1.50	421
1.55	429
1.60	438
1.65	446
1.70	454
1.75	462
1.80	470
1.85	477
1.90	485
1.95	493
2.00	500
2.05	508
2.10	515

(continued)

**Appendix 1-7 (continued)**

<b>Cleaning Capacity (m<sup>3</sup>)</b>	<b>3 mo rolling average monthly emission limit (kg/mo)</b>
2.15	522
2.20	530
2.25	537
2.30	544
2.35	551
2.40	558
2.45	565
2.50	572
2.55	579
2.60	585
2.65	592
2.70	599
2.75	605
2.80	612
2.85	619
2.90	625
2.95	632





<b>FACILITY:</b>	<b>COMPLIANCE CATEGORY:</b> <b>AIR EMISSIONS MANAGEMENT</b> Fish and Wildlife Service	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> NA    C    RMA	<b>REVIEWER COMMENTS:</b>		

## **SECTION 2**

### **Drinking Water Management**

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A. Applicability	1
B. Federal Legislation	1
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**The contents of this section are the minimum requirements the auditor must review. The auditor must also review applicable state and local regulations.**

## SECTION 2

### DRINKING WATER MANAGEMENT

#### A. Applicability

This section identifies rules, regulations, and requirements for any FWS facility that has jurisdiction over any public water supply system. A public water system is defined as a system for providing piped water to the public for human consumption, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. This term includes:

1. any collection, treatment, storage, and distribution facilities under control of the operator of such system
2. any collection or pretreatment storage facility not under such control that is used primarily in connection with such system.

A public water system is either a community water system or a noncommunity water system (40 CFR 141.2).

FWS facilities that meet all the criteria listed below are not required to comply with the requirements of the *Safe Drinking Water Act* (SDWA) since, by definition, they are not public water systems (40 CFR 141.3):

1. system consists only of distribution and storage facilities and does not have any collection and treatment facilities
2. facility gets all of its water from a public water system that is owned or operated by another party (non-FWS)
3. facility does not sell water to any party.

#### B. Federal Legislation

- *The Safe Drinking Water Act* (SDWA). This act, Public Law (PL) 99-339, 42 U.S. Code (USC) 201, 300f-300j-25, 6939b, 6979a, 6979b, 7401--742, etc., is the Federal legislation which regulates the safety of drinking water in the country. Each department, agency, and instrument of the executive, legislative, and judicial branches of the Federal Government having jurisdiction over any potential source of contaminants identified by a state program must be subject to and observe all requirements of the state program applicable to such potential source of contaminants, both substantive and procedural, in the same manner, and to the same extent, as any other person, including payment of reasonable charges and fees (42 USC 300h-7(h)).

If a Federal agency has jurisdiction over any Federally owned or maintained public water system, or is engaged in any activity resulting, or which may result in, underground water injection which endangers drinking water, it is subject to, and must observe, any Federal, state, and local regulations, administrative authorities, and process and sanctions respecting the provision of safe drinking water and respecting any underground injection program

in the same manner, and to the same extent, as any nongovernmental entity. This requirement applies (42 USC 300j-6(a)):

1. to any rules substantive or procedural (including any recordkeeping or reporting, permits, and other requirements)
2. to the exercise of any Federal, state, or local authorities
3. to any process or sanction, whether enforced in Federal, state, or local courts or in any other manner.

National primary drinking water regulations apply to each public water system in each state. However, such regulations do not apply to a public water system (42 USC 300g):

1. which consists only of distribution and storage facilities (and does not have any collection and treatment facilities)
2. which obtains all its water from, but is not owned or operated by, a public water system to which such regulations apply
3. which does not sell water to any person
4. which is not a carrier which conveys passengers in interstate commerce.

Each department, agency, or instrument of the executive, legislative, and judicial branches of the Federal Government, and each officer, agent, or employee of such organization, must comply with all Federal, state, interstate, and local requirements, administrative authority, and process and sanctions regarding the control and abatement of water pollution in the same manner and to the same extent as any nongovernmental entity including the payment of reasonable service charges (33 USC 1323(a)).

- Executive Order (EO) 12088, *Federal Compliance with Pollution Standards*. This EO of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements or to correct situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.
- Federal regulations used to develop the checklist include:
  - EO 12088, *Federal Compliance with Pollution Control Standards*.
  - 40 CFR 141, *National Primary Drinking Water Regulations*.
  - 40 CFR 142, *National Primary Drinking Water Regulations Implementation*.
  - 40 CFR 149, *Sole Source Aquifers*.

### C. State/Local Regulations

States have primary responsibility to enforce compliance with national primary drinking water standards and sampling, monitoring, and notice requirements in conformance with 40 CFR 141. U.S. Environmental Protection Agency (USEPA) executes the enforcement responsibilities until individual state programs are approved.

States that have primacy may establish drinking water regulations, monitoring schedules, and reporting requirements more stringent than, or in addition to, those in the Federal reg-

ulations. FWS public water systems in these states are required to comply with these additional requirements. Generally speaking, most states who have primacy adopt drinking water regulations which closely reflect the Federal requirements. Almost all states have achieved authorization from USEPA to administer drinking water compliance programs including underground injection control (UIC) programs.

#### **D. FWS/DOI Manuals**

- 561 FW 4, *Compliance Requirements, Safe Drinking Water Act*. This chapter, dated 27 February 1995, provides policy and instructions for complying with the SDWA at Service facilities.

#### **E. Key Compliance Requirements**

- Service Drinking Water Systems - Service controlled systems serving resident or nontransient populations are required to monitor as if they are classified a nontransient noncommunity water system. Service controlled systems, both public and nonpublic, serving transient populations are required to monitor as if they are classified as a transient noncommunity water system.
- Plans and Records - The drinking water facility manager must keep records of actions taken to correct or repair any part of the treatment and distribution system for at least 3 yr. Records of chemical analyses are required to be kept for not less than 10 yr. Facilities are required to survey public water systems and maintain records of those reviews (MP, 40 CFR 141.21(d) and 141.33(b)).
- Physical Requirements for Drinking Water Systems - All water systems shall install and operate optimal corrosion control treatment and/or comply with corrosion control requirements specified by the state (40 CFR 141.80(d)).
- Maximum Contaminant Level (MCL) Standards - Drinking water is to be supplied from sources approved by Federal, state, or local health authorities, or treated to specific standards. Community water systems, noncommunity water systems, except as defined under exempted water systems, and nontransient, noncommunity water systems are required to meet specific MCLs and action levels for organic, inorganic, turbidity, and microbiological contaminants. These are outlined in Appendices 13-1 and 13-2 (40 CFR 141.11(a) through 141.11(c), 141.12, 141.15, 141.16(a), and 141.60 through 141.63).
- Monitoring - The monitoring schedule and what constituents are to be monitored is based on what type of drinking water facility is being operated. Facilities with community water systems and/or nontransient, noncommunity water systems are required to monitor for inorganic contaminants. All public water systems are required to conduct monitoring to determine compliance for nitrate and nitrite levels. Monitoring for Endrin is required to be done according to specific schedules. Community and noncommunity water systems are required to monitor for total coliforms and facilities are required to monitor for radioactivity in community water systems. Facilities with community water systems that add a disinfectant to the water are required to analyze for total trihalomethanes (TTHM) (40 CFR 141.21(a), 141.23, 141.24, and 141.26).

- **Total Coliform and Turbidity Sampling** - Total coliform samples are required to be collected at regular intervals throughout the month except at systems that use only groundwater and serve 4900 people or fewer. These systems are exempt from sampling at regular intervals but are required to still sample. Public water systems that use surface water or groundwater under the direct influence of surface water and do not practice filtration are required to collect at least one total coliform sample near the first service connection each day the turbidity level of the source water exceeds 1 NTU. When a routine sample is total coliform-positive, the public water system must collect a set of repeat samples within 24 h of being notified of the positive result. Sampling for turbidity is required to be done at public water systems that use water obtained in whole or part from surface water sources according to a specific schedule and any excesses reported (40 CFR 141.21 and 141.22).
- **Water Analysis** - Suppliers of water for community public water systems are required to analyze for sodium and collect samples from representative entry points to the water distribution system and analyze for corrosivity. All analysis of samples used to determine compliance with MCLs must be performed in a state-approved lab or by a state-approved individual (40 CFR 141.28, 141.30, 141.41, and 141.42).
- **Filtration and Disinfection** - Facilities that have a public water system that uses surface water sources or groundwater sources under direct influence of a surface water source, must provide filtration as a treatment technique for microbiological contaminants which meets specific standards, provide disinfection treatment by 29 June 1993, and report specific information monthly to the state starting 29 June 1993, or when filtrating (40 CFR 141.70 and 141.72).
- **Notification and Reporting Requirements** - When primary drinking water standards are exceeded, public notifications must be made. Facilities that operate public water systems must send reports to the state on any failure to comply with the applicable biological, turbidity, radioactivity, and chemical standards, and on any failure to comply with monitoring requirements that apply (40 CFR 141.31, 141.32, and 141.33(a)).
- **Lead and Copper in Drinking Water Systems** - Facilities with community or nontransient, noncommunity water systems must notify their users about lead in drinking water systems and must meet specific standards for lead and copper action levels and reporting requirements when these levels are exceeded. Facilities with water systems exceeding the lead action level after the implementation of corrosion control and source water treatment requirements are required to replace lead service lines. Monitoring for lead and copper is required to start on a specified date, be done at a specified number of sites. The facility is required to fulfill specific reporting requirements and retain onsite all the original records of sampling data, analysis, reports, surveys, letters, evaluations, state determinations, and any other pertinent documents for at least 12 yr (40 CFR 141.80 through 141.90).

## **F. Key Compliance Definitions**

- **Action Level** - the concentration of lead or copper in the water specified in 40 CFR 141.80(c) which determines, in some cases, the treatment requirements that a water system is required to complete (40 CFR 141.2).

- *Best Available Technology (BAT)* - the best technology treatment techniques, or other means which the administrator finds, examined for efficacy under field conditions and not solely under lab conditions that are available (taking cost into consideration). For the purposes of setting MCLs for synthetic organic chemicals, any BAT must be at least as effective as granular activated carbon (40 CFR 141.2).
- *Coagulation* - a process using coagulant chemicals and mixing by which colloidal and suspended materials are destabilized and agglomerated into flocs (40 CFR 141.2).
- *Community Water System* - a public water system that serves at least 15 service connections used by year round residents or regularly serves at least 25 year-round residents (40 CFR 141.2)
- *Contaminant* - any physical, chemical, biological, or radiological substance or matter in water (40 CFR 141.2).
- *Conventional Filtration Treatment* - a series of processes including coagulation, flocculation, sedimentation, and filtration resulting in substantial particulate removal (40 CFR 141.2).
- *Diatomaceous Earth Filtration* - a process resulting in substantial particulate removal in which (40 CFR 141.2):
  1. a precoat cake of diatomaceous earth filter media is deposited on a support membrane (septum)
  2. while the water is filtered by passing through the cake on the septum, additional filter media known as body feed is continuously added to the feed water to maintain the permeability of the filter cake.
- *Direct Filtration* - a series of processes including coagulation and filtration but excluding sedimentation resulting in substantial particulate removal (40 CFR 141.2).
- *Disinfectant* - any oxidant, including but not limited to chlorine, chlorine dioxide, chloramines, and ozone added to water in any part of the treatment or distribution process, that is intended to kill or inactivate pathogenic micro-organisms (40 CFR 141.2).
- *Disinfection* - a process which inactivates pathogenic organisms in water by chemical oxidants or equivalent agents (40 CFR 141.2).
- *Domestic or Other Nondistribution System Plumbing Problem* - a coliform contamination problem in a public water system with more than one service connection that is limited to the specific service connection from which the coliform-positive sample was taken (40 CFR 141.2).
- *Exempted Public Water Systems* - public water systems which meet all of the following are not required to meet the standards outlined in 40 CFR 141 (40 CFR 141.3):
  1. systems which consist only of distribution and storage facilities and do not have any collection and treatment facilities
  2. systems that obtain all of their water from, but is not owned by or operated by, a public water system to which 40 CFR 141 applies

3. systems that do not sell water to any person
4. systems that are not a carrier that conveys passengers in interstate commerce.

- *Filtration* - a process for removing particulate matter from water by passage through porous media (40 CFR 141.2).
- *Flocculation* - a process to enhance agglomeration or collection of smaller floc particles into larger, more easily settleable particles through gentle stirring by hydraulic or mechanical means (40 CFR 141.2).
- *Gross Alpha Particle Activity* - the total radioactivity due to alpha particle emissions as inferred from measurements on a dry sample (40 CFR 141.2).
- *Groundwater Under the Direct Influence of Surface Water* - refers to any water beneath the surface of the ground with (40 CFR 141.2):
  1. significant occurrence of insects or other macro-organisms, algae, or large-diameter pathogens such as *Giardia lamblia*
  2. significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions.

Direct influence must be determined for individual sources in accordance with criteria established by the state.

- *Halogen* - one of the chemical elements chlorine, bromine, or iodine (40 CFR 141.2).
- *Initial Compliance Period* - the first full 3 yr compliance period which begins at least 18 mo after promulgation, except for Dichloromethane, 1,2,4-Trichlorobenzene, 1,1,2-Trichloroethane, Benzo(a)pyrene, Dalapon, Di(2-ethylhexyl) adipate, Di(2-ethylhexyl) phthalate, Dinoseb, Diquat, Endrin, Endothall, Glyphosate, Hexachlorobenzene, Hexachlorocyclopentadiene, Oxamyl (Vydate), Picloram, Simazine, 2,3,7,8-TCDD (Dioxin), Antimony, Beryllium, Cyanide (as free Cyanide), Nickel, and Thallium, initial compliance period means the first full 3 yr compliance period after promulgation for systems with 150 or more service connections (January 1993 - December 1995, and first full 3 yr compliance period after the effective date of the regulation (January 1996 - December 1998) for systems having fewer than 150 service connections (40 CFR 141.2).
- *Large Water System* - in reference to lead and copper in systems, this refers to a water system that serves more than 50,000 persons (40 CFR 141.2).
- *Lead Service Line* - a service line made of lead which connects the water main to the building inlet and any lead pigtail, gooseneck, or other fitting which is connected to such a lead line (40 CFR 141.2).
- *Legionella* - means a genus of bacteria, some species of which have caused a type of pneumonia called Legionnaires Disease (40 CFR 141.2).
- *Management Practice (MP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.



- *Maximum Contaminant Level (MCL)* - the maximum permissible level of a contaminant in water that is delivered to any user of a public water system (40 CFR 141.2).
- *Maximum Contaminant Level Goal (MCLG)* - refers to the maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur, and which allows an adequate margin of safety. MCLGs are nonenforceable health goals (40 CFR 141.2).
- *Maximum Total Trihalomethane (TTHM) Potential* - means the maximum concentration of TTHM produced in a given water containing a disinfectant residual after 7 days at a temperature of 25 °C or above (40 CFR 141.2).
- *Medium Size Water System* - in reference to lead and copper in systems, this refers to a water system that serves greater than 3300 and less than or equal to 50,000 persons (40 CFR 141.2).
- *Near the First Service Connection* - means at one of the 20 percent of all service connections in the entire system that are nearest the water supply treatment facility, as measured by water transport time within the distribution system (40 CFR 141.2).
- *Noncommunity Water System* - a public water system that is not a community water system (40 CFR 141.2).
- *Nontransient, Noncommunity Water System (NTNCWS)* - a public water system that is not a community water system and that regularly serves at least 25 of the same persons over 6 mo/yr (40 CFR 141.2).
- *Person* - an individual, corporation, company, association, partnership, municipality, or state, Federal, or tribal agency (40 CFR 141.2).
- *PicoCurie (pCi)* - quantity of radioactive material producing 2.22 nuclear transformations/min (40 CFR 141.2).
- *Point of Disinfectant Application* - the point where the disinfectant is applied and water downstream of that point is not subject to recontamination by surface water runoff (40 CFR 141.2).
- *Point-of-Entry Treatment Device* - a treatment device applied to the drinking water entering a house or building for the purpose of reducing contaminants in the drinking water distributed throughout the house or building (40 CFR 141.2).
- *Point-of-Use Treatment Device* - a treatment device applied to a single tap used for the purpose of reducing contaminants in drinking water at that one tap (40 CFR 141.2).
- *Public Water System* - a system for providing piped water to the public for human consumption, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. This term includes (40 CFR 141.2):
  1. any collection, treatment, storage, and distribution facilities under control of the operator of such system

2. any collection or pretreatment storage facilities not under such control that are used primarily in connection with such system.

A public water system is either a community water system or a noncommunity water system.

- *Rem* - the unit of dose equivalent from ionizing radiation to the total body or any internal organ or organ system. A millirem (mrem) is 1/1000 of a rem (40 CFR 141.2).
- *Residual Disinfectant Concentration* - ("C" in CT calculations) is the concentration of disinfectant measured in milligrams per liter in a representative sample of water (40 CFR 141.2).
- *Sanitary Survey* - an onsite review of the water source, facilities, equipment, operation and maintenance of a public water system for the purpose of evaluating the adequacy of such source facilities, equipment, operation and maintenance for producing and distributing safe drinking water (40 CFR 141.2).
- *Sedimentation* - a process for removal of solids before filtration by gravity or separation (40 CFR 141.2).
- *Slow Sand Filtration* - a process involving passage of raw water through a bed of sand at low velocity (generally less than 0.4 m/h [1.31 ft/h]) resulting in substantial particulate removal by physical and biological mechanisms (40 CFR 141.2).
- *Standard Sample* - the aliquot of finished drinking water that is examined for the presence of coliform bacteria (40 CFR 141.2).
- *State* - the agency of the state or tribal government that has jurisdiction over public water systems. During any period when a state or tribal government does not have primary enforcement responsibility pursuant to Section 1413 of the SDWA (42 USC 300g-2), the term state means the Regional Administrator of the USEPA (40 CFR 141.2).
- *Supplier of Water* - any person who owns or operates a public water system (40 CFR 141.2).
- *Surface Water* - all water that is open to the atmosphere and subject to surface runoff (40 CFR 141.2).
- *System with a Single Service Connection* - a system which supplies drinking water to consumers via a single service line (40 CFR 141.2).
- *Total Trihalomethanes (TTHM)* - the sum of the concentration in milligrams per liter of the trihalomethane compounds rounded to two significant figures (40 CFR 141.2).
- *Transient Noncommunity Water System (TWS)* - a noncommunity water system that does not regularly serve at least 25 of the same persons over 6 mo per year (40 CFR 141.2).

- *Trihalomethane (THM)* - one of the family of organic compounds, named as derivatives of methane, wherein three of the four hydrogen atoms in methane are each substituted by a halogen atom in the molecular structure (40 CFR 141.2).
- *Virus* - means a virus of fecal origin which is infectious to humans by waterborne transmission (40 CFR 141.2).
- *Waterborne Disease Outbreak* - the significant occurrence of acute infectious illness, epidemiologically associated with the ingestion of water from a public water system which is deficient in treatment, as determined by the appropriate local or state agency (40 CFR 141.2).



# DRINKING WATER MANAGEMENT

## GUIDANCE FOR CHECKLIST USERS

	REFER TO CHECKLIST ITEMS:	REFER TO PAGE NUMBER:
All Facilities	2-1 through 2-7	2-15
Public Water Systems		
General	2-8 through 2-11	2-19
Monitoring/Sampling	2-12 through 2-14	2-21
Disinfection and Filtration	2-15 through 2-22	2-23
Lead and Copper	2-23	2-29
Notification and Reporting Requirements	2-24 through 2-26	2-31
Community Water Systems		
Standards	2-27 and 2-28	2-33
Monitoring/Sampling	2-29 through 2-42	2-35
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Noncommunity Water Systems		
Standards	2-54	2-53
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Nontransient/Noncommunity (NTNC) Water Systems		
Standards	2-57	2-57
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Lead and Copper	2-66 through 2-75	2-67
Transient/Noncommunity Water Systems	2-76	2-73
Sole Source Aquifer	2-77	2-75





[illegible]



**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>2-3.</b> Facilities are required to meet regulatory requirements issued since the finalization of the handbook (a finding under this checklist item will have the citation of the new regulation as a basis of finding).</p>	<p>Determine if any new regulations concerning water quality have been issued since the finalization of the handbook.</p> <p>Verify that the facility is in compliance with newly issued regulations.</p>
<p><b>2-4.</b> FWS facilities should report all NOV's to the Region and the Service Pollution Control Office (SPCO) (MP).</p>	<p>Determine if the facility has received an NOV relating to drinking water.</p> <p>Verify that the NOV was reported to the Region and the SPCO.</p>
<p><b>2-5.</b> Analysis of all samples, except turbidity, free chlorine residual, temperature, and pH, to determine compliance with MCLs must be performed in a state-certified laboratory or by a state-approved individual (40 CFR 141.23(k)(6), 141.24(f)(17), 141.24(h)(19), and 141.28).</p>	<p>Verify that the laboratory is certified by reviewing documentation of state certification for laboratory analysis.</p>
<p><b>2-6.</b> Service controlled systems serving resident or nontransient populations are required to monitor as if they are classified as a nontransient, noncommunity water system (561 FW 4.7(c)(2)).</p>	<p>Verify that Service controlled systems serving resident or nontransient populations (e.g. hatchery buildings, shops, offices, residences, headquarters buildings, laboratories, etc.) monitor as if they are classified as a nontransient, noncommunity water system</p> <p>(NOTE: See checklist items 2-57 through 2-75.)</p>



**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>PUBLIC WATER SYSTEMS</b></p> <p><b>General</b></p> <p>2-8. The facility must keep records of actions taken to correct violations of primary drinking water regulations for at least 3 yr (40 CFR 141.33(b)).</p> <p>2-9. Facilities are required to survey public water systems according to a specified schedule and maintain records of those reviews (40 CFR 141.21(d) and 141.33 (c)).</p>	<p>(NOTE: A public water system is a system for providing piped water to the public for human consumption, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. This term includes:</p> <ul style="list-style-type: none"> <li>- any collection, treatment, storage, and distribution facilities under control of the operator of such system</li> <li>- any collection or pretreatment storage facilities not under such control that are used primarily in connection with such system.</li> </ul> <p>A public water system is either a community water system or a noncommunity water system and must comply with the standards outlined in the applicable sections of this checklist.).</p> <p>Verify that as-built drawings are updated to reflect changes in water supply.</p> <p>Verify that water system records are maintained for at least 3 yr.</p> <p>Determine if there are recurring work programs, spare parts and supplies list, equipment calibration and maintenance history records.</p> <p>Verify that noncommunity water systems which do not collect five or more routine samples per month have undergone an initial sanitary survey by 29 June 1999 and are then surveyed every 5 yr thereafter.</p> <p>Verify that community water systems that collect less than five routine biological samples per month are surveyed every 5 yr since 29 June 1994.</p> <p>(NOTE: Noncommunity water systems using only protected and disinfected groundwater are only required to conduct a survey every 10 yr after the initial survey.)</p> <p>Verify that records of sanitary system surveys are kept for 10 yr.</p> <p>Verify that the results of the sanitary surveys have been submitted to the state and determine whether the state has requested an alternate monitoring frequency.</p>

**COMPLIANCE CATEGORY:**  
**DRINKING WATER MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>2-10.</b> All public water systems shall install and operate optimal corrosion control treatment and/or comply with corrosion control requirements specified by the state (40 CFR 141.80(d)).</p> <p><b>2-11.</b> Public water systems that use point-of-entry devices to comply with MCL are required to meet specific standards (40 CFR 141.100 and 141.101).</p>	<p>Verify that water systems are operating corrosion control systems and/or meeting state requirements.</p> <p>Determine if the facility public water system uses a point-of-entry device to comply with MCLs.</p> <p>Verify that the facility has developed and obtained state approval for a monitoring plan prior to the point-of-entry devices being installed.</p> <p>(NOTE: A point-of-entry device may be used on a temporary basis to avoid an unreasonable health risk without having a state approved plan.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>PUBLIC WATER SYSTEMS</b></p> <p><b>Monitoring/Sampling</b></p> <p><b>2-12.</b> Total coliform samples are required to be collected at regular time intervals throughout the month except at system which use only groundwater and serves 4900 person or fewer (40 CFR 141.21 (a)(4)).</p> <p><b>2-13.</b> Public water systems that use surface water or groundwater, under the direct influence of surface water, that do not practice filtration, are required to collect at least one total coliform sample near the first service connection each day the turbidity level of the source water exceeds 1 NTU (40 CFR 141.21 (a)(5) and 141.74(b)(1)).</p>	<p>Verify that total coliform samples are collected at regular intervals.</p> <p>(NOTE: Systems that use groundwater (except groundwater under the influence of surface water) and serve 4900 persons or fewer may collect all required samples on a single day if they are being taken from different sites.)</p> <p>Verify that, when the turbidity exceeded 1 NTU, total coliform samples were taken within 24 h of the first exceedence by reviewing the records on turbidity levels.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>2-14.</b> When a routine sample is total coliform-positive, the public water system must collect a set of repeat samples within 24 h of being notified of the positive result (40 CFR 141.21(b)(1) through 141.21(b)(4) and 141.21(e)(1)).</p>	<p>Verify that, if more than one routine sample per month is collected, at least three repeat samples are taken for each total coliform-positive sample found.</p> <p>Verify that, if one or less routine sample per month is collected, no less than four repeat samples are collected for each total coliform-positive sample found.</p> <p>Verify that at least one of the repeat samples is collected from the sampling tap where the original total coliform positive sample was taken.</p> <p>Verify that at least one repeat sample is taken at a tap within five service connections upstream and at least one repeat sample at a tap within five service connections downstream of the original sampling site.</p> <p>Verify that the sampling process is repeated until either total coliforms are not detected in one complete set of repeat samples or the system determines that the MCL for total coliforms is exceeded and the state is notified.</p> <p>Verify that all repeat samples are collected on the same day.</p> <p>Verify that, if one or more of the repeat samples is total coliform-positive, an additional set of repeat samples is collected within 24 h of notification of the positive result.</p> <p>Verify that, if a repeat sample is total coliform-positive, it is also analyzed for fecal coliforms.</p> <p>(NOTE: The system may test for <i>Escherichia coli</i> (<i>E. coli</i>) instead of fecal coliforms.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>PUBLIC WATER SYSTEMS</b></p> <p><b>Disinfection and Filtration</b></p> <p><b>2-15.</b> Facilities that have a public water system that uses surface water sources or groundwater sources under direct influence of a surface water source must provide filtration as a treatment technique for microbiological contaminants unless certain criteria are met (40 CFR 141.71(a) and 141.71 (b)).</p>	<p>(NOTE: Public water systems that use a groundwater source under the direct influence of surface are not required to meet these conditions to avoid filtration until 18 mo after the state has determined that the system is under the direct influence of surface water.)</p> <p>Verify that filtration of drinking water is performed unless all of the following conditions for surface water are met:</p> <ul style="list-style-type: none"> <li>- the fecal coliform concentration is less than or equal to 20/100 mL or total coliform concentration is equal to or less than 100/100 mL in representative samples of the source water immediately prior to the first or only point of disinfectant application in at least 90 percent of the measurements made in the last 6 mo that the system served water to the public on an ongoing basis</li> <li>- the turbidity level does not exceed 5 NTU in representative samples of the source water immediately prior to the first or only point of disinfectant application, unless state determines otherwise and there has not been more than two events in the past 12 mo the system served water to the public or more than five events in the past 120 mo the system served water to the public.</li> </ul> <p>Verify that filtration of drinking water is done unless all the following site specific conditions are met:</p> <ul style="list-style-type: none"> <li>- meets the requirements of 40 CFR 141.72(a)(1) (see checklist item 2-17) for disinfection treatment of <i>Giardia lamblia</i> for at least 11 of the 12 previous mo</li> <li>- meets 40 CFR 141.72(a)(2) through 141.72(a)(4) (see checklist item 2-17) at all times</li> <li>- maintains a watershed control program for <i>Giardia lamblia</i> in the source water, including: <ul style="list-style-type: none"> <li>- identification of watershed characteristics</li> <li>- monitoring occurrence of activities that have adverse effects</li> <li>- demonstrates through ownership and/or written agreements that the control of adverse effects of human activities are regulated</li> <li>- submits annual reports to the state</li> <li>- subject to annual onsite inspection by the state or a party approved by the state, to assess watershed control program</li> </ul> </li> </ul>

<b>COMPLIANCE CATEGORY:</b> <b>DRINKING WATER MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<b>2-15. (continued)</b>	<ul style="list-style-type: none"> <li>- has not been identified as a source of waterborne disease or threat or has been modified sufficiently to prevent recurrence</li> <li>- complies with MCL for total coliforms as defined in 40 CFR 141.63 for at least 11 of the previous 12 mo (see Appendix 2-1)</li> <li>- complies with requirements for trihalomethanes as listed on 40 CFR 141.12 and 141.30 (see Appendix 2-1).</li> </ul>
<b>2-16.</b> Systems that do not meet the criteria necessary for exclusion from filtration for public water systems that use a surface water source or a groundwater source under the direct influence of surface water must provide filtration that meets specific standards by 29 June 1993, or within 18 mo after being required to provide filtration, whichever is later (40 CFR 141.73, 141.74(c)(1), 141.74(c)(2), and 141.74(c)(4)).	<p>Verify that, if conventional or direct filtration is used, the following are met:</p> <ul style="list-style-type: none"> <li>- a turbidity level of 0.5 NTU or less in 95 percent of measurements taken each month</li> <li>- the turbidity level of representative samples of filtered water at no time exceeds 5 NTU.</li> </ul> <p>Verify that, if slow sand filtration is used, the following are met:</p> <ul style="list-style-type: none"> <li>- the turbidity level of representative samples of a systems filtered water is 1 NTU or less in 95 percent of the monthly measurements.</li> <li>- the turbidity level of representative samples of a systems filtered water at no time exceeds 5 NTU.</li> </ul> <p>Verify that, if diatomaceous earth filtration is used, the following is met:</p> <ul style="list-style-type: none"> <li>- the turbidity level of representative samples of a systems filtered water is less than or equal to 1 NTU in at least 95 percent of the measurements taken each month</li> <li>- the turbidity level of representative samples of a systems filtered water at no time exceeds 5 NTU.</li> </ul> <p>Verify that, if other filtration technologies are used, they have been approved by the state.</p> <p>Verify that, starting 29 June 1993, or when filtration is installed, turbidity measurements are performed on representative samples of the systems filtered water every 4 h that the system serves water to the public.</p> <p>Verify that, as of 29 June 1993, or whenever filtration is installed, the residual disinfectant concentration of water entering the distribution system is monitored continuously and the lowest value recorded each day.</p> <p>Verify that, if there is a failure in the continuous monitoring equipment, grab sampling is done every 4 h.</p> <p>(NOTE: Grab sampling can be done for no more than 5 working days following the failure of the continuous monitoring system.)</p>



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REGULATORY REQUIREMENTS:	REVIEWER CHECKS: July 1995										
2-16. (continued)	<p>(NOTE: Systems serving 3300 or fewer person can use grab sampling instead of continuous monitoring if the following daily frequencies are met:</p> <table> <thead> <tr> <th>System size by population</th> <th>Samples/day</th> </tr> </thead> <tbody> <tr> <td>≤ 500</td> <td>1</td> </tr> <tr> <td>501 - 1000</td> <td>2</td> </tr> <tr> <td>1001 - 2500</td> <td>3</td> </tr> <tr> <td>2501 - 3300</td> <td>4.)</td> </tr> </tbody> </table> <p>Verify that, any time the residual disinfectant concentration falls below 0.2 mg/L in a system using grab sampling, the system takes a grab sample every 4 h until the residual disinfectant concentration is equal to or greater than 0.2 mg/L.</p> <p>Verify that the residual disinfectant concentration is measured at least at the same points in the distribution system and at the same time as total coliforms are sampled.</p>	System size by population	Samples/day	≤ 500	1	501 - 1000	2	1001 - 2500	3	2501 - 3300	4.)
System size by population	Samples/day										
≤ 500	1										
501 - 1000	2										
1001 - 2500	3										
2501 - 3300	4.)										
2-17. Facilities with public water systems that use a surface water source or a groundwater source under direct influence of a surface water source, that is not required to provide filtration, are required to provide disinfection treatment by 30 December 1991 (40 CFR 141.72(a)).	<p>Verify that the following requirements for disinfection are met:</p> <ul style="list-style-type: none"> <li>- it ensures 99.9 percent (3-log) inactivation of <i>Giardia lamblia</i> cysts every day except for once per month by meeting the required CT applicable to the systems particular water quality parameters as outlined in 40 CFR 141.74</li> <li>- it ensures 99.99 percent (4-log) inactivation of virus every day except for once per month by meeting the required CT applicable to the systems particular water quality parameters as outlined in 40 CFR 141.74</li> <li>- the CT values are calculated daily as specified in 40 CFR 141.74(b)(3)</li> <li>- throughout the disinfection system there is either: <ul style="list-style-type: none"> <li>- automatic startup and alarm for insuring continuous disinfection application while water is delivered through the distribution system</li> <li>- automatic shutoff when there is less than 0.2 mg/L residual disinfectant</li> </ul> </li> <li>- the residual disinfectant concentration in water entering distribution system is not less than 0.2 mg/L for more than 4 h</li> <li>- the residual disinfectant concentration, measured as total chlorine, combined chlorine, or chlorine dioxide is not undetectable in more than 5 percent of samples each month for more than 2 consecutive months.</li> </ul> <p>(NOTE: Water in a distribution system with a heterotrophic bacteria concentration less than or equal to 500 mL, measured as heterotrophic plate count (HPC) is deemed to have a detectable disinfectant residual.)</p>										

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>2-18.</b> Facilities with public water systems that use a surface water source or a groundwater source, under direct influence of a surface water source, that provide filtration or that are required by the state to install filtration, must meet specific disinfection requirements by 29 June 1993 or within 18 mo of being required to install filtration (40 CFR 141.72(b) and 141.73).</p>	<p>Determine if the facility provides filtration for drinking water.</p> <p>Verify that the following requirements for disinfection are provided:</p> <ul style="list-style-type: none"> <li>- it ensures 99.9 percent (3-log) inactivation of <i>Giardia lamblia</i> cysts</li> <li>- it ensures 99.99 percent (4-log) inactivation of viruses</li> <li>- the residual disinfectant concentration in water entering distribution system is not less than 0.2 mg/L for more than 4 h</li> <li>- the residual disinfectant concentration throughout the distribution system is not undetectable in more than 5 percent of samples each month for any 2 consecutive months the system serves water to the public</li> <li>- analytical methods as specified in 40 CFR 141.74 are used to demonstrate compliance with the requirements for filtration and disinfection.</li> </ul> <p>(NOTE: Systems that filter are given an inactivation credit dependant on the type of filtration used.)</p>
<p><b>2-19.</b> Facilities with public water systems that use a surface water source and do not provide filtration are required to report specific information monthly to the state beginning 31 December 1990 (unless the state has determined that filtration is not required) until filtration is in place (40 CFR 141.75(a)).</p>	<p>Verify that the following listed information is reported to the state at the indicated times:</p> <ul style="list-style-type: none"> <li>- source water quality information within 10 days after the end of each month the system serves water to the public</li> <li>- disinfection information within 10 days after the end of each month the system serves water to the public</li> <li>- a report summarizing compliance with all watershed control programs no later than 10 days after the end of each Federal FY</li> <li>- a report on the onsite inspection conducted during that year, unless it was conducted by the state, no later than 10 days after the end of the Federal FY</li> <li>- the occurrence of a waterborne disease outbreak potentially attributable to that water system as soon as possible, but no later than by the end of the next business day</li> <li>- when turbidity exceeds 5 NTU, as soon as possible, but no later than the end of the next business day</li> <li>- any time the residual falls below 0.2 mg/L in the water entering the distribution system as soon as possible, but no later than by the end of the next business day.</li> </ul>
	<p>(NOTE: See the complete text of 40 CFR 141.75(a) for more details on how this information is to be reported.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>2-20.</b> Facilities with public water systems that use a groundwater source under the direct influence of surface water and do not provide filtration treatment must report specific information to the state monthly starting 31 December 1990, or 6 mo after the state determines that the groundwater source is under the direct influence of surface water, whichever is later (40 CFR 141.75(a)).</p>	<p>Verify that the following listed information is reported to the state at the indicated times:</p> <ul style="list-style-type: none"> <li>- source water quality information within 10 days after the end of each month the system serves water to the public</li> <li>- disinfection information within 10 days after the end of each month the system serves water to the public</li> <li>- a report summarizing compliance with all watershed control programs no later than 10 days after the end of each Federal FY</li> <li>- a report on the onsite inspection conducted during that year, unless it was conducted by the state, no later than 10 days after the end of the Federal FY</li> <li>- the occurrence of a waterborne disease outbreak potentially attributable to that water system as soon as possible, but no later than by the end of the next business day</li> <li>- when turbidity exceeds 5 NTU, as soon as possible but no later than the end of the next business day</li> <li>- any time the residual falls below 0.2 mg/L in the water entering the distribution system as soon as possible, but no later than by the end of the next business day.</li> </ul> <p>(NOTE: See the complete text of 141.75(a) for more details on how this information is to be reported.)</p>
<p><b>2-21.</b> Facilities with public water systems that use a surface water source or a groundwater source under the direct influence of surface water that provide filtration must report specific information monthly to the state starting 29 June 1993 or when filtration is installed, whichever is later (40 CFR 141.75(b)).</p>	<p>Verify that by 29 June 1993, or whenever filtration is installed, the following information is provided to the state in the indicted time frame:</p> <ul style="list-style-type: none"> <li>- turbidity measurements within 10 days after the end of each month the system serves water to the public</li> <li>- disinfection information within 10 days after the end of each month the system serves water to the public</li> <li>- notice of an occurrence of a waterborne disease outbreak, as soon as possible but no later than by the end of the next business day</li> <li>- when the turbidity exceeds 5 NTU, as soon as possible, but no later than the end of the next business day</li> <li>- any time the residual falls below 0.2 mg/L in the water entering the distribution system, as soon as possible, but no later than by the end of the next business day.</li> </ul> <p>(NOTE: See the complete text of 40 CFR 141.75(b) for more details on how this information is to be reported.)</p>

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**REGULATORY  
REQUIREMENTS:**

2-22. USEPA has set certain standards for analytic procedures that must be used and followed to demonstrate compliance with disinfection and filtration requirements (40 CFR 141.74).

**REVIEWER CHECKS:  
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Verify that analytic methods as specified in 40 CFR 141.74 are used to demonstrate compliance with the requirements for filtration and disinfection.

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**REGULATORY  
REQUIREMENTS:**

**PUBLIC WATER  
SYSTEMS**

**Lead and Copper**

**2-23.** The use of pipe, solder, or flux that contains lead is not allowed in specific situations (40 CFR 141.43(a)(1) and 141.43(d)).

**REVIEWER CHECKS:  
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Verify that lead pipe, solder, or flux is not used in the installation or repair of either of the following:

- any public water system
- any plumbing in a residential facility providing water for human consumption which is connected to a public water system.

(NOTE: This does not apply to leaded joints necessary for the repair of cast iron pipes.)

(NOTE: Lead-free is defined as not more than 0.2 percent content for solders and flux and not more than 8.0 percent lead in reference to pipes and pipe fittings.)



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>PUBLIC WATER SYSTEMS</b></p> <p><b>Notification and Reporting Requirements</b></p> <p><b>2-24.</b> Public water systems are required to maintain on the premises, or at a convenient location specific records (40 CFR 141.33(a), 141.33(b), and 141.33(d)).</p> <p><b>2-25.</b> When primary drinking water standards are exceeded, public notifications must be made (40 CFR 141.32).</p>	<p>Verify that records of bacteriological analyses are kept for a minimum of 5 yr.</p> <p>Verify that records of chemical analyses are kept for a minimum of 10 yr.</p> <p>Verify that records concerning a variance or exemption granted to the system are kept for a period ending not less than 5 yr following the expiration of the variance or exemption.</p> <p>Verify that, if there was an exceedance, the following public notification procedures were followed:</p> <ul style="list-style-type: none"> <li>- notices were placed in a daily newspaper of general circulation in the area served by the system as soon as possible, but no later than 14 days after the violation or failure</li> <li>- notices were placed in a weekly newspaper of general circulation if there is no daily newspaper</li> <li>- notices were issued by mail delivery, by direct mail or with the water bill, or by hand delivery within 45 days after the violation or failure.</li> </ul> <p>(NOTE: The state may waive mail or hand delivery if it is determined that the violation or failure is corrected within the 45-day period.)</p> <p>Verify that, if it was an acute violation, the public radio and television stations were notified no later than 72 h after the violation.</p> <p>Verify that, if public notification was made, it was made according to USEPA guidelines.</p> <p>Verify that, following the initial notice, additional notice is given at least once every 3 mo by mail delivery, or by hand delivery, for as long as the violation exists.</p> <p>(NOTE: Instead of the requirements outlined here, community water systems in an area that is not served by a daily or weekly newspaper of general circulation must give notice by hand delivery or by continuous posting in conspicuous places within the area served by the system. Notice must be given within 72 h for acute violations and 14 days for other violations.)</p>

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**Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**2-26.** Facilities that operate public water systems must send reports to the state on any failure to comply with applicable biological, turbidity, radioactivity, and chemical standards, and on any failure to comply with monitoring requirements that apply (40 CFR 141.31).

**REVIEWER CHECKS:**  
**July 1995**

Verify that, in general, reports are sent within the first 10 days following the month in which the result is received or the first 10 days following the end of the required monitoring period whenever standards are not met.

Verify that the facility reported failure to comply with any national primary drinking water regulations to the state within 48 h.



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>COMMUNITY WATER SYSTEMS</b></p> <p><b>Standards</b></p> <p><b>2-27.</b> Community water systems, except as defined under exempted water systems in the definitions, are required to meet specific MCLs for inorganic and organic chemicals, fluorides, radium 226, radium-228, gross alpha particle radioactivity, beta particles, and photon radioactivity from man-made radionuclides (40 CFR 141.11(a) through 141.11(c), 141.12, 141.15, and 141.16(a)).</p> <p><b>2-28.</b> Community water systems, except as defined under exempted water systems, are required to meet specific MCLs for organic contaminants, inorganic contaminants and microbiological contaminants (40 CFR 141.60 through 141.63).</p>	<p>(NOTE: A community water systems is a public water system that serves at least 15 service connections used by year round residents or regularly serves at least 25 year-round residents. Community water systems must also comply with the standards for public water systems.)</p> <p>Verify that combined radium-226 and radium-228 do not exceed 5 pCi/L.</p> <p>Verify that gross alpha particle radioactivity does not exceed 15 pCi/L.</p> <p>Verify that the average annual concentration of beta particles and photon radioactivity from manmade radionuclides does not produce an average dose rate equal to the total body or any internal organ greater than 4 mrem/yr.</p> <p>Verify that the MCL of 4.0 mg/L for fluoride is not exceeded.</p> <p>Verify that the MCLs outlined in Appendix 2-1 and 2-2 are met.</p> <p>Verify that the standards outlined in Appendix 2-1 and 2-2 are met.</p> <p>Verify that systems which collect at least 40 bacteriological samples per month have no more than 5 percent of the samples collected during a month that are total coliform positive.</p> <p>Verify that systems which collect less than 40 bacteriological samples per month have no more than one sample collected per month that is total coliform positive.</p> <p>Verify that there are no fecal coliform-positive repeat samples or <i>E. coli</i>-positive repeat samples, or any total coliform-positive repeat samples following a fecal coliform-positive or <i>E. coli</i>-positive routine sample.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>COMMUNITY WATER SYSTEMS</b></p> <p><b>Monitoring/Sampling</b></p> <p><b>2-29.</b> Facilities with community water systems are required to meet specific monitoring requirements for inorganic contaminants (40 CFR 141.23 (a)).</p>	<p>Verify that groundwater systems:</p> <ul style="list-style-type: none"> <li>- take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment (a sampling point) beginning in the compliance period starting 1 January 1993</li> <li>- take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.</li> </ul> <p>Verify that surface water systems:</p> <ul style="list-style-type: none"> <li>- take a minimum of one sample at every entry point to the distribution system after any application of treatment or in the distribution system at a point that is representative of each source after treatment (a sampling point) beginning in the compliance period starting 1 January 1993</li> <li>- takes each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.</li> </ul> <p>(NOTE: In relation to these requirements, surface water systems include systems with a combination of surface and ground sources.)</p> <p>Verify that, if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions.</p> <p>(NOTE: The state may reduce the total number of samples which must be analyzed by allowing the use of compositing. Composite samples from a maximum of five sampling points are allowed if the detection limit of the method used for analysis is less than one fifth the MCL and compositing is done in a laboratory.)</p> <p>Verify that, if the concentration in a composite sample is greater than or equal to one-fifth of the MCL of any inorganic chemical, a followup sample is analyzed within 14 days from each sampling point included in the composite and analyzed for the contaminants which exceeded one fifth of the MCL in the composite sample.</p> <p>(NOTE: Detection limits for each analytical methods and MCLs for each inorganic contaminant are listed in Appendix 2-3.)</p>

<b>COMPLIANCE CATEGORY:</b> <b>DRINKING WATER MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<b>2-29. (continued)</b>	<p>Verify that, for groundwater systems, inorganic monitoring is repeated at least once every compliance period (every 3 yr), and samples are taken quarterly for at least two quarters if a MCL is violated.</p> <p>Verify that, for surface water systems, inorganic sampling is repeated annually and samples are taken quarterly for at least four quarters if a MCL is violated.</p> <p>(NOTE: The state may issue a waiver reducing the required monitoring.)</p>
<b>2-30.</b> Facilities with community water systems are required to meet specific monitoring requirements for asbestos (40 CFR 141.23(b)).	<p>Verify that asbestos is monitored during the first 3-yr compliance period of each 9-yr compliance cycle starting 1 January 1993.</p> <p>(NOTE: The facility may apply to the state for a waiver of monitoring if they believe that asbestos is not an issue.)</p> <p>Verify that, if the system is vulnerable to asbestos contamination only because of corrosion of asbestos-cement pipe, one sample is taken at a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur.</p> <p>Verify that, if the system is vulnerable to asbestos contamination due to both its source water supply and corrosion of asbestos-cement pipe, one sample is taken at a tap served by asbestos-cement pipe and under conditions where contamination is most likely to occur.</p> <p>Verify that, when the MCL is exceeded, monitoring is done quarterly.</p>
<b>2-31.</b> Facilities with community water systems are required to meet specific monitoring requirements for antimony, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium, and thallium (40 CFR 141.23(c)).	<p>Verify that monitoring is done as follows:</p> <ul style="list-style-type: none"> <li>- groundwater systems: take one sample at each sampling point during each compliance period</li> <li>- surface water systems (or combined surface/ground): take one sample annually at each sampling point</li> <li>- when MCLs are exceeded, monitoring is done quarterly.</li> </ul> <p>(NOTES: States may grant a public water system a waiver for the monitoring of cyanide.)</p>

**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>2-32.</b> All community water systems are required to conduct monitoring to determine compliance for nitrate and nitrite levels according to specific parameters (40 CFR 141.23(d) and 141.23 (e)).</p>	<p>Verify that the following schedules are met for monitoring of nitrate:</p> <ul style="list-style-type: none"> <li>- community water systems served by groundwater monitor annually starting 1 January 1993</li> <li>- community water systems served by surface water monitor quarterly starting 1 January 1993.</li> </ul> <p>Verify that, when the MCL for nitrate is exceeded, community water systems do repeat monitoring quarterly for at least 1 yr following any one sample in which the concentration exceeds more than 50 percent of the MCL.</p> <p>(NOTE: After the initial round of quarterly sampling is completed, each community system which is monitoring annually shall take the subsequent samples during the quarters which previously resulted in the highest analytical result.)</p> <p>Verify that public water systems take one sample at each sampling point in the compliance period beginning 1 January 1993 and ending 31 December 1995 for nitrite.</p> <p>(NOTE: After the initial sample, systems where an analytical result for nitrite is less than 50 percent of the MCL will monitor at the frequency specified by the state.)</p> <p>Verify that community systems repeat monitoring for nitrites quarterly for at least 1 yr after any one sample is greater than 50 percent of the MCL.</p> <p>Verify that systems which are monitoring annually for nitrites take each subsequent sample during the quarters which previously resulted in the highest analytical result.</p> <p>Verify that, when nitrate or nitrite samples indicate an exceedance of the MCL, a confirmation sample is taken within 24 h of receipt of the results.</p> <p>(NOTE: If the system is unable to take a confirmation sample within 24 h, it must notify consumers of the exceedance.)</p>

**COMPLIANCE CATEGORY:  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>2-33.</b> Beginning with the initial compliance period, monitoring of the contaminants listed in Table 2 of Appendix 2-1 at community water systems is required to be done according to specific parameters (40 CFR 141.24(f)).</p>	<p>Verify that groundwater systems take a minimum of one sample at every entry point of the distribution system which is representative of each well after treatment.</p> <p>Verify that surface water systems (or combined surface/ground) take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment.</p> <p>(NOTE: For both groundwater and surface water systems, each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant, or within the distribution system.)</p> <p>Verify that, if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions.</p> <p>Verify that each community water system takes four consecutive quarterly samples for each contaminant, except vinyl chlorides.</p> <p>(NOTE: If the initial monitoring for contaminants is completed by December 1992 and none of the contaminants listed are found, then each system shall take one sample annually starting with the initial compliance period.)</p> <p>(NOTE: After a minimum of 3 yr of sampling, the state may reduce the number of samples to one each compliance period.)</p> <p>Verify that, if a contaminant, except vinyl chloride, is detected at a level exceeding 0.0005 mg/L in any sample, the system monitors quarterly at each sampling point which resulted in a detection.</p> <p>Verify that groundwater systems which have detected one or more of the following two-carbon organic compounds; trichloroethylene, tetrachloroethylene, 1,2-dichloroethane, 1,1,1-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, or 1,1-dichloroethylene monitor quarterly for vinyl chlorides at each sampling point at which one or more of the two-carbon organic compounds was detected.</p> <p>Verify that, when the MCLs are exceeded, monitoring is conducted quarterly until the state determines that the system is reliably and consistently below the MCL.</p>

**COMPLIANCE CATEGORY:  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>2-34.</b> Monitoring for organic contaminants listed in Table 3 of Appendix 2-1 at community water systems is required to be done according to specific parameters (40 CFR 141.24(h)).</p>	<p>Verify that groundwater systems take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment.</p> <p>Verify that surface water systems (or surface/ground) take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment.</p> <p>(NOTE: For both groundwater and surface water systems, each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant, or within the distribution system.)</p> <p>Verify that, if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions.</p> <p>Verify that each community water system takes four consecutive quarterly samples for each contaminant during each compliance period starting with the initial compliance period.</p> <p>(NOTE: Systems serving more than 3300 persons, that do not detect a contaminant in the initial compliance period, may reduce sampling to two quarterly samples in 1 yr during each repeat compliance period.)</p> <p>(NOTE: Systems serving less than or equal to 3300 person, that do not detect a contaminant in the initial compliance period, may reduce sampling to one sample during each repeat compliance period.)</p> <p>Verify that, when an organic contaminant is detected (see Appendix 2-4), the system monitors quarterly at each sampling point that resulted in a detection.</p> <p>Verify that, if monitoring results in detection of one or more of aldicarb, aldicarb sulfone, aldicarb sulfoxide, heptchlor, and heptchlor epoxide, then subsequent monitoring analyzes for all related contaminants.</p> <p>(NOTE: The state may reduce the number of samples required and/or the frequency of sampling.)</p>

**COMPLIANCE CATEGORY:  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>								
<p>2-35. Community systems are required to monitor for specific organic and inorganic contaminants (40 CFR 141.35 and 141.40(a) through 141.40(m)).</p>	<p>Verify that monitoring is being done for the following contaminants: chloroform; bromodichloromethane; bromoform; chlorodibromomethane; dibromomethane; m-dichlorobenzene; 1,1-dichloropropene; 1,1-dichloroethane; 1,1,2,2-tetrachloroethane; 1,3-dichloropropane; chloromethane; bromomethane; 1,2,3-trichloropropane; 1,1,1,2-tetrachloroethane; chloroethane; 2,2-dichloropropane; o-chlorotoluene; p-chlorotoluene; bromobenzene; 1,3-dichloropropene.</p> <p>Verify that surface water systems sample at points in the distribution system that are representative of each water source or at entry point to the distribution system after any application of treatment.</p> <p>Verify that, for surface water systems, the minimum number of samples taken is 1 yr of quarterly samples per water system.</p> <p>Verify that groundwater systems sample at points of entry to the distribution system, representative of each well after any application of treatment.</p> <p>Verify that, for groundwater systems, the minimum number of samples taken is one sample taken per entry point to the distribution system.</p> <p>Verify that initial monitoring was done by the dates specified in the following, and that all community water systems repeat the monitoring every 5 yr after the specified dates:</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Number of persons served</td><td style="width: 50%;">Monitoring To Begin No Later Than:</td></tr> <tr> <td>Over 10,000</td><td>1 January 1988</td></tr> <tr> <td>3300 to 10,000</td><td>1 January 1989</td></tr> <tr> <td>less than 3300</td><td>1 January 1991.</td></tr> </table> <p>(NOTE: Public water systems may use monitoring data collected any time after 1 January 1983 to meet the requirements for unregulated monitoring, provided the monitoring program was consistent with these requirements. Additionally, the results of USEPA's Groundwater Supply Survey may be used in a similar manner for systems supplied by a single well.)</p> <p>(NOTE: The state may require monitoring of additional contaminants.)</p> <p>(NOTE: Instead of doing the monitoring required here, a community water system water system serving fewer than 150 service connections may send a letter to the state by 1 January 1991 stating that the system is available for sampling.)</p> <p>Verify that the facility notifies the systems users of the availability of the results of sampling.</p> <p>Verify that the facility sends copies of the monitoring results within 30 days after public notification.</p>	Number of persons served	Monitoring To Begin No Later Than:	Over 10,000	1 January 1988	3300 to 10,000	1 January 1989	less than 3300	1 January 1991.
Number of persons served	Monitoring To Begin No Later Than:								
Over 10,000	1 January 1988								
3300 to 10,000	1 January 1989								
less than 3300	1 January 1991.								



**COMPLIANCE CATEGORY:  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>2-36.</b> Monitoring of specific contaminants must be completed by 31 December 1995 (40 CFR 141.35 and 141.40(n)).</p>	<p>Verify that the substances listed in Appendix 2-5 are monitored for by 31 December 1995.</p> <p>Verify that each community water systems takes four consecutive quarterly samples for the unregulated organic contaminants listed in Appendix 2-5 at each sampling point and reports the results to the state.</p> <p>Verify that each community water system takes one sample at each sampling points for the unregulated inorganic compounds listed in Appendix 2-5 and reports the results to the state.</p> <p>Verify that groundwater systems take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment and that each sample is taken from the same sampling point unless conditions make another sampling point more representative of each source or treatment.</p> <p>Verify that surface water systems, including systems with a combination of surface and ground sources, take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment and that each sample is taken from the same sampling point unless conditions make another sampling point more representative of each source or treatment.</p> <p>Verify that, if the system draws water from more than one source and the sources are combined before distribution, the system samples at the entry point to the distribution system during periods of normal operating conditions.</p> <p>Verify that the facility notifies the systems users of the availability of the results of sampling.</p> <p>Verify that the facility sends copies of the monitoring results within 30 days after public notification.</p>
<p><b>2-37.</b> Community water systems, except as defined as exempted water systems, are required to monitor for total coliforms at a frequency based on the population served by the system (40 CFR 141.21(a)(2) and 141.21(a)(4)).</p>	<p>Verify that the facility's community water systems is sampling according to the schedule in Appendix 2-6.</p> <p>Verify that samples are collected at regular time intervals throughout the month;.</p> <p>(NOTE: A system which uses only groundwater (except groundwater under the direct influence of surface water) and serves 4900 persons or fewer may collect all required samples in a single day if they are taken from different sites.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<p><b>2-38.</b> Sampling for turbidity is required to be done at community water systems which must install filtration according to a specific schedule until the time at which the systems installs filtration (40 CFR 141.22).</p> <p><b>2-39.</b> Facilities are required to monitor for radioactivity in community water systems (40 CFR 141.26).</p>	<p>Verify that suppliers of water for community water systems sample for turbidity at a representative entry point to the water distribution system at least once daily.</p> <p>Verify that, when the turbidity levels are exceeded, immediate resampling is done.</p> <p>Verify that the state is notified within 48 h.</p> <p>(NOTE: These systems must monitor for turbidity according to 40 CFR 141.73 and 141.74 after installation of filtration. See checklist item 2-16.)</p> <p>Verify that compliance for standards of gross alpha particle activity, radium-226, and radium-228 are based on an annual composite of four consecutive samples that are obtained at quarterly intervals or the average of the analyses of four samples obtained at quarterly intervals.</p> <p>(NOTE: A gross alpha particle activity measurement may be substituted for the required radium-226 and radium-228 analysis if the measured gross alpha particle activity does not exceed 5 pCi/L at a confidence level of 95 percent.)</p> <p>Verify that, when the gross alpha particle activity exceeds 5 pCi/L, the same or an equivalent sample is analyzed for radium-226 and if the concentration of radium-226 exceeds 3 pCi/L, the same or equivalent sample is analyzed for radium-228.</p> <p>Verify that suppliers of water monitor for gross alpha particle activity, radium-226, and radium-228 every 4 yr and within 1 yr of the introduction of a new water source for a community water system.</p> <p>(NOTE: The state has the power to order additional samples, waive required samples, and impose additional requirements.)</p> <p>Verify that, if the MCL for gross alpha particle activity or total radium is exceeded and the facility is the supplier of a community water system, the installation notifies the state and the public of the exceedence.</p> <p>Verify that systems using surface water sources and serving more than 100,000 persons are initially monitored quarterly for compliance with man-made radioactivity limitations and after the initial analysis, monitoring is done at least every 4 yr.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<b>2-39. (continued)</b>	<p>Verify that suppliers of any community water system using waters contaminated by nuclear facilities initiate quarterly monitoring for gross beta particle and iodine-131 radioactivity and annual monitoring for strontium-90 and tritium.</p>
<p><b>2-40.</b> Facilities with community water systems that add a disinfectant to the water are required to analyze for TTHM (40 CFR 141.30).</p>	<p>(NOTE: The minimum number of samples that is required is based on the number of treatment plants used by the system.)</p> <p>Verify that community water systems serving a population of 10,000 or more individuals that adds a disinfectant to the water and uses surface water sources or only groundwater sources analyze for total TTHM on a quarterly basis on at least four samples.</p> <p>(NOTE: The state may reduce monitoring frequency.)</p>
<p><b>2-41.</b> Suppliers of water for community public water systems are required to analyze for sodium (40 CFR 141.41).</p>	<p>Verify that one sample is taken per plant at the entry point of the distribution system annually for systems using surface water in whole or in part and every 3 yr for systems using solely groundwater sources.</p> <p>Verify that the results of the sampling were reported to the USEPA and/or state within 10 days following the end of the required monitoring period or within the first 10 days of the month following the month in which the sample was taken.</p>
<p><b>2-42.</b> Suppliers of water for community water systems shall collect samples from representative entry points to the water distribution system and analyze for corrosivity (40 CFR 141.42).</p>	<p>Verify that the supplier collects two samples per plant for analyses for each plant using surface water sources wholly or in part.</p> <p>Verify that the samples are taken once in mid-winter and once during mid-summer.</p> <p>Verify that one sample per plant is collected for each plant using groundwater sources.</p> <p>(NOTE: Determination of corrosivity includes measurement of pH, calcium, hardness, alkalinity, temperature, total dissolved solids, and calculation of the Langelier Index.)</p> <p>Verify that the results for the analyses of corrosivity are reported to the USEPA and/or state within the first 10 days of the month following the month in which the sample results were received.</p> <p>(NOTE: The state might require monitoring for additional parameters which may indicate corrosivity, such as sulfates and chlorides.)</p>



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**REGULATORY  
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**COMMUNITY WATER  
SYSTEMS**

**Notifications**

**2-43.** Community water systems that exceed the secondary MCL of 2.0 mg/L for fluoride but not the MCL of 4.0 mg/L are required to notify specific individuals (40 CFR 143.5).

Verify that notice has been provided to the following:

- all billing units annually
- all new billing units at the time service begins
- the state public health officer.

(NOTE: A copy of the text of the notice is found in 40 CFR 143.5(b).)



<b>COMPLIANCE CATEGORY:</b> <b>DRINKING WATER MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<b>COMMUNITY WATER SYSTEMS</b>  <b>Lead and Copper</b>  <b>2-44.</b> Facilities with community water systems must educate their users about lead in drinking water systems (40 CFR 141.85 and 141.90(f)).	<p>Verify that public education materials are distributed in the following manner when a water system exceeds the lead action level based on tap water samples:</p> <ul style="list-style-type: none"> <li>- the material is in the appropriate languages where languages other than English are spoken by a significant proportion of the population</li> <li>- within 60 days after exceeding the lead action level:               <ul style="list-style-type: none"> <li>- notices are insert in each customer's water utility bill</li> <li>- information is provided to the editorial departments of the major daily and weekly newspapers circulated in the community</li> <li>- pamphlets or brochures are delivered to pertinent facilities, organizations, schools and medical centers</li> <li>- public service announcements are submitted to at least five of the radio and television stations broadcasting to the community.</li> </ul> </li> </ul> <p>Verify that the notification tasks are repeated every 6 mo for as long as a community water system exceeds the lead action level.</p> <p>(NOTE: The text of written materials and broadcast materials can be found in 40 CFR 141.85(a) and 141.85(b).)</p> <p>Verify that, by December 31st, any water system that has had to issue public education materials submits a letter to the state indicating that the system has delivered the public education materials as required each year that the levels are exceeded.</p>
<b>2-45.</b> Community water systems are required to meet specific standards for lead and copper action levels and reporting requirements when these levels are exceeded (40 CFR 141.80(a)(1) and 141.80(c)).	<p>Verify that the concentration of lead does not exceed 0.015 mg/L in more than 10 percent of tap water samples collected during any monitoring period.</p> <p>Verify that the concentration of copper does not exceed 1.3 mg/L in more than 10 percent of tap water samples collected during any monitoring period.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>2-46.</b> All water systems are required to install and operate optimal corrosion control (40 CFR 141.80(d) and 141.82).</p>	<p>Verify that the water system has corrosion control that minimizes the lead and copper concentrations at users' taps while insuring that the treatment does not cause the water system to violate any of the national primary drinking water standards.</p> <p>(NOTE: Please see 40 CFR 141.81 for design details for corrosion control systems in relationship to the size of the water system.)</p>
<p><b>2-47.</b> Systems that exceed the lead or copper action level are required to implement applicable source water treatment standards (40 CFR 141.80(e) and 141.83).</p>	<p>Verify that systems exceeding the lead or copper action level do lead and copper source water monitoring and make a treatment recommendation to the state within 6 mo after exceeding the lead or copper action level.</p> <p>Verify that, if the state requires the installation of source water treatment, the installation is done within 24 mo after the states initial response.</p> <p>Verify that followup tap water monitoring and source water monitoring is completed within 36 mo after the state's initial response.</p>
<p><b>2-48.</b> Facilities with water systems exceeding the lead action level after implementation of corrosion control and source water treatment requirements are required to replace lead service lines (40 CFR 141.80(f) and 141.84).</p>	<p>Verify that lead service line replacement is done according to the schedules and parameters outlined in 40 CFR 141.84.</p> <p>(NOTE: A system is not required to replace an individual lead service line if the lead concentration in all service line samples from that line is less than or equal to 0.015 mg/L.)</p> <p>(NOTE: Replacement of lead service lines can stop when the first draw samples that are collected meet the lead action levels during two consecutive monitoring periods and the system submits the results to the state.)</p>
<p><b>2-49.</b> Monitoring for lead and copper is required to start on a specified date and be done at a specified number of sites according to the chart in Appendix 2-7 (40 CFR 141.80(h), 141.86(a)(1), 141.86(a)(3) through 141.86(a)(5), 141.86(c), and 141.86(d)).</p>	<p>Verify that sample sites have been selected and sampling started as of the dates indicated in Appendix 2-7.</p> <p>Verify that monitoring is done according to the schedules outlined in 40 CFR 141.86 and as required by the state.</p> <p>Verify that the procedures for sampling and granting of variances found in 40 CFR 141.86 are followed.</p> <p>Verify that selected sampling sites (Tier 1 sampling sites) consist of single family structures that have one or both of the following:</p> <ul style="list-style-type: none"> <li>- contain copper pipes with lead solder installed after 1982 or contain lead pipes</li> <li>- are served by a lead service line.</li> </ul>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
2-49. (continued)	<p>(NOTE: When multiple family residences comprise at least 20 percent of the structure served by a water system, the system may include these types of structures in its sampling pool.)</p> <p>Verify that, if the facility has insufficient Tier 1 sampling sites, it completes its sampling pool with tier 2 sites that consist of buildings, including multiple family residences, that contain copper pipes with lead solder installed after 1982 or contain lead pipes; and/or are served by a lead service line.</p> <p>Verify that, if the facility has insufficient Tier 1 and Tier 2 sites, the facility completes its sample with Tier 3 sites consisting of single family structures that contain copper pipes with lead solder installed before 1983.</p> <p>Verify that, for the initial tap sample, all large water systems monitor during two consecutive 6 mo periods and all small and medium-size water systems monitor during each 6 mo period until:</p> <ul style="list-style-type: none"> <li>- the system exceeds the lead or copper action levels and is then required to implement corrosion control treatment</li> <li>- the system meets the lead and copper action levels during two consecutive 6-mo monitoring periods.</li> </ul> <p>(NOTE: A small or medium-sized water system that meets the lead and copper action levels during each of two consecutive 6-mo monitoring periods can reduce the frequency of sampling to once a year. If action levels are met during 3 consecutive years of monitoring, the frequency may be reduced to once every 3 yr.)</p> <p>Verify that, for monitoring after the installation of corrosion control and source water treatment, large systems with optimal corrosion control by 1 January 1997 monitor during two consecutive 6 mo periods by 1 January 1998.</p> <p>Verify that, for monitoring after the installation of corrosion control and source water treatment, small or medium-size systems that install optimal corrosion control within 24 mo after being required to do so by the state, monitor during two consecutive 6-mo periods within 36 mo after being required to install optimal corrosion control treatment.</p> <p>Verify that, for monitoring after the installation of corrosion control and source water treatment required by the state, all systems that install state required systems monitor during two consecutive months within 36 mo after the initial state requirement.</p> <p>Verify that, after the state has specified water quality parameter values for optimal corrosion control, monitoring is done during each subsequent 6-mo monitoring period beginning when the state specified the optimal values.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>2-50.</b> All large water systems and all small and medium size systems that exceed the lead or copper action level are required to monitor for water quality parameters in addition to lead and copper (40 CFR 141.40(h) and 141.87).</p> <p><b>2-51.</b> Water systems that fail to meet the lead or copper action levels are required to meet specific monitoring requirements (40 CFR 141.80(h) and 141.88).</p>	<p>Verify that monitoring for water quality parameters is done according to Appendix 2-8.</p> <p>Verify that systems that exceed lead or copper action levels at the tap collect one source water sample from each entry point to the distribution system within 6 mo after the exceedence.</p> <p>Verify that systems which install source water treatment as required by the state collect an additional source water sample from each entry point to the distribution system during two consecutive 6-mo monitoring periods.</p> <p>Verify that the system monitors as follows when the state specifies maximum permissible source water levels:</p> <ul style="list-style-type: none"> <li>- once during the 3-yr compliance period for water systems using only groundwater</li> <li>- annually for water systems using surface water or a combination of surface and groundwater.</li> </ul> <p>(NOTE: Frequency of monitoring may be reduced by the state upon request.)</p>
<p><b>2-52.</b> In reference to lead and copper in water systems, all water systems are required to fulfill specific reporting requirements (40 CFR 141.90).</p>	<p>Verify that water systems report sampling results for all tap water samples within the first 10 days following the end of each monitoring period.</p> <p>Verify that water systems report the sampling results for all source water samples within the first 10 days following the end of each source water monitoring period.</p> <p>Verify that the following reports are submitted as applicable:</p> <ul style="list-style-type: none"> <li>- corrosion control treatment</li> <li>- source water treatment</li> <li>- lead service line replacement</li> <li>- demonstration of public education program.</li> </ul>

**COMPLIANCE CATEGORY:  
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**REGULATORY  
REQUIREMENTS:**

**2-53.** All systems subject to the lead and copper requirements are required to retain onsite all the original records of sampling data, analysis, reports, surveys, letters, evaluations, state determinations, and any other pertinent documents for at least 12 yr (40 CFR 141.80(j) and 141.91).

**REVIEWER CHECKS:  
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Verify that records are kept onsite for 12 yr.



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>NONCOMMUNITY WATER SYSTEMS</b></p> <p><b>Standards</b></p> <p><b>2-54.</b> Noncommunity water systems, except as defined under exempted water systems, will not exceed a MCL for nitrate of 10 mg/L (40 CFR 141.11 (a)).</p>	<p>(NOTE: A noncommunity water system is one which is not a community water system. It is a public water system. Noncommunity water systems are classified as either a nontransient noncommunity (NTNC) water system, or a transient, noncommunity water system.)</p> <p>Verify that the nitrate level at noncommunity water systems does not exceed 10 mg/L.</p>



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**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>NONCOMMUNITY WATER SYSTEMS</b></p> <p><b>Monitoring/Sampling</b></p> <p><b>2-55.</b> Noncommunity water systems, except as defined under exempted water systems, are required to monitor for total coliforms according to a specific schedule (40 CFR 141.21(a)(3)).</p> <p><b>2-56.</b> Sampling for turbidity is required to be done at noncommunity water systems which must install filtration according to a specific schedule until the time at which the systems installs filtration (40 CFR 141.22).</p>	<p>Verify that the noncommunity water systems using only groundwater (except groundwater under the direct influence of surface water) and serving 1000 persons or less, monitors each calendar quarter the system provides water to the public.</p> <p>Verify that the following noncommunity water systems are monitoring for total coliforms according to the schedule outlined in Appendix 2-6:</p> <ul style="list-style-type: none"> <li>- systems using only groundwater (except groundwater under the direct influence of surface water) and serving more than 1000 persons during any month</li> <li>- systems using surface water, in total or in part</li> <li>- systems using groundwater under the direct influence of surface water.</li> </ul> <p>Verify that suppliers of water for noncommunity water systems sample for turbidity at a representative entry point to the water distribution system at least once daily.</p> <p>Verify that, when the turbidity levels are exceeded, immediate resampling is done.</p> <p>Verify that the state is notified within 48 h.</p> <p>(NOTE: These systems must monitor for turbidity according to 40 CFR 141.73 and 141.74 after installation of filtration. See checklist item 2-16.)</p>





**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>NONTRANSIENT/ NONCOMMUNITY (NTNC) WATER SYSTEMS</b></p> <p><b>Standards</b></p> <p><b>2-57.</b> NTNC water systems, except as defined under exempted water systems, are required to meet specific MCLs for organic contaminants, inorganic contaminants and microbiological contaminants (40 CFR 141.60 through 141.63).</p>	<p>(NOTE: An NTNC water system must also meet the standards for a public water system and a noncommunity water system. An NTNC is defined as a water system that is not a community water system that regularly serves at least 25 of the same persons over 6 mo of the year.)</p> <p>Verify that the standards outlined in Appendix 2-1 and 2-2 are met.</p> <p>Verify that systems which collect at least 40 bacteriological samples per month have no more than 5 percent of the samples collected during a month that are total coliform positive.</p> <p>Verify that systems which collect less than 40 bacteriological samples per month have no more than one sample collected per month that is total coliform positive.</p> <p>Verify that there are no fecal coliform-positive repeat sampling or <i>E. coli</i>-positive repeat samples, or any total coliform-positive repeat samples following a fecal coliform-positive or <i>E coli</i>-positive routine sample.</p>



**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>NTNC WATER SYSTEMS</b></p> <p><b>Monitoring/Sampling</b></p> <p><b>2-58.</b> Facilities with NTNC water systems are required to meet specific monitoring requirements for inorganic contaminants (40 CFR 141.23(a)).</p>	<p>Verify that groundwater systems:</p> <ul style="list-style-type: none"> <li>- take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment (a sampling point) beginning in the compliance period starting 1 January 1993</li> <li>- take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.</li> </ul> <p>Verify that surface water systems:</p> <ul style="list-style-type: none"> <li>- take a minimum of one sample at every entry point to the distribution system after any application of treatment or in the distribution system at a point that is representative of each source after treatment (a sampling point) beginning in the compliance period starting 1 January 1993</li> <li>- takes each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.</li> </ul> <p>(NOTE: In relation to these requirements, surface water systems include systems with a combination of surface and ground sources.)</p> <p>Verify that, if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions.</p> <p>(NOTE: The state may reduce the total number of samples which must be analyzed by allowing the use of compositing. Composite samples from a maximum of five sampling points are allowed if the detection limit of the method used for analysis is less than one fifth the MCL and compositing is done in a laboratory.)</p> <p>Verify that, if the concentration in a composite sample is greater than or equal to one-fifth of the MCL of any inorganic chemical, a followup sample is analyzed within 14 days from each sampling point included in the composite and analyzed for the contaminants which exceeded one fifth of the MCL in the composite sample.</p> <p>(NOTE: Detection limits for each analytical methods and MCLs for each inorganic contaminant are listed in Appendix 2-3.)</p>

**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<b>2-58. (continued)</b>	<p>Verify that, for groundwater systems, inorganic monitoring is repeated at least once every compliance period (every 3 yr), and samples are taken quarterly for at least two quarters if a MCL is violated.</p> <p>Verify that, for surface water systems, inorganic sampling is repeated annually and samples are taken quarterly for at least four quarters if a MCL is violated.</p> <p>(NOTE: The state may issue a waiver reducing the required monitoring.)</p>
<p><b>2-59.</b> Facilities with NTNC water systems are required to meet specific monitoring requirements for asbestos (40 CFR 141.23(b)).</p>	<p>Verify that asbestos is monitored during the first 3 yr compliance period of each 9 yr compliance cycle starting 1 January 1993.</p> <p>(NOTE: The facility may apply to the state for a waiver of monitoring if they believe that asbestos is not an issue.)</p> <p>Verify that, if the system is vulnerable to asbestos contamination only because of corrosion of asbestos-cement pipe, one sample is taken at a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur.</p> <p>Verify that, if the system is vulnerable to asbestos contamination due to both its source water supply and corrosion of asbestos-cement pipe, one sample is taken at a tap served by asbestos-cement pipe and under conditions where contamination is most likely to occur.</p> <p>Verify that, when the MCL is exceeded, monitoring is done quarterly.</p>
<p><b>2-60.</b> Facilities with NTNC water systems are required to meet specific monitoring requirements for anti-mony, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium, and thallium (40 CFR 141.23(c)).</p>	<p>Verify that monitoring is done as follows:</p> <ul style="list-style-type: none"> <li>- groundwater systems: take one sample at each sampling point during each compliance period</li> <li>- surface water systems (or combined surface/ground): take one sample annually at each sampling point</li> <li>- when MCLs are exceeded, monitoring is done quarterly.</li> </ul> <p>(NOTES: States may grant a public water system a waiver for the monitoring of cyanide.)</p>

**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>2-61.</b> NTNC water systems are required to conduct monitoring to determine compliance for nitrate and nitrite levels according to specific parameters (40 CFR 141.23(d) and 141.23(e)).</p>	<p>Verify that the following schedules are met for monitoring of nitrate:</p> <ul style="list-style-type: none"> <li>- NTNC water systems served by groundwater monitor annually starting 1 January 1993</li> <li>- NTNC water systems served by surface water monitor quarterly starting 1 January 1993.</li> </ul> <p>(NOTE: States may allow surface water systems to reduce annual sampling if analytical results from 4 consecutive quarters are less than 50 percent of the MCL.)</p> <p>Verify that, NTNC water systems do repeat monitoring quarterly for at least 1 yr following any one sample in which the concentration exceeds more than 50 percent of the MCL.</p> <p>(NOTE: States may allow groundwater systems to return to annual sampling if four consecutive quarters results are consistently and reliably below the MCL.)</p> <p>(NOTE: After the initial round of quarterly sampling is completed, each NTNC system which is monitoring annually shall take the subsequent samples during the quarters which previously resulted in the highest analytical result.)</p> <p>Verify that NTNC water systems take one sample at each sampling point in the compliance period beginning 1 January 1993 and ending 31 December 1995 for nitrite.</p> <p>(NOTE: After the initial sample, systems where an analytical result for nitrite is less than 50 percent of the MCL will monitor at the frequency specified by the state.)</p> <p>Verify that NTNC systems repeat monitoring for nitrites quarterly for at least 1 yr after any one sample is greater than 50 percent of the MCL.</p> <p>Verify that systems, which are monitoring annually for nitrites, take each subsequent sample during the quarters which previously resulted in the highest analytical result.</p> <p>Verify that, when nitrate or nitrite samples indicate an exceedence of the MCL, a confirmation sample is taken within 24 h of receipt of the results.</p> <p>(NOTE: If the system is unable to take a confirmation sample within 24 h, it must notify consumers of the exceedence.)</p>

**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>2-62.</b> Beginning with the initial compliance period, monitoring of the contaminants listed in Table 2 of Appendix 2-1 at NTNC water systems is required to be done according to specific parameters (40 CFR 141.24(f)).</p>	<p>Verify that groundwater systems take a minimum of one sample at every entry point of the distribution system which is representative of each well after treatment.</p> <p>Verify that surface water systems (or combined surface/ground) take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment.</p> <p>(NOTE: For both groundwater and surface water systems, each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant, or within the distribution system.)</p> <p>Verify that, if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions.</p> <p>Verify that each NTNC water system takes four consecutive quarterly samples for each contaminant, except vinyl chlorides.</p> <p>(NOTE: If the initial monitoring for contaminants is completed by December 1992 and none of the contaminants listed are found, then each system shall take one sample annually starting with the initial compliance period.)</p> <p>(NOTE: After a minimum of 3 yr of sampling, the state may reduce the number of samples to one each compliance period.)</p> <p>Verify that, if a contaminant, except vinyl chloride, is detected at a level exceeding 0.0005 mg/L in any sample, the system monitors quarterly at each sampling point which resulted in a detection.</p> <p>Verify that groundwater systems which have detected one or more of the following two-carbon organic compounds; trichloroethylene, tetrachloroethylene, 1,2-dichloroethane, 1,1,1-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, or 1,1-dichloroethylene, monitor quarterly for vinyl chlorides at each sampling point at which one or more of the two-carbon organic compounds was detected.</p> <p>Verify that, when the MCLs are exceeded, monitoring is conducted quarterly until the state determines that the system is reliably and consistently below the MCL.</p>

**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>2-63.</b> Monitoring for organic contaminants listed in Table 3 of Appendix 2-1 at NTNC water systems is required to be done according to specific parameters (40 CFR 141.24(h)).</p>	<p>Verify that groundwater systems take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment.</p> <p>Verify that surface water systems (or surface/ground) take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment.</p> <p>(NOTE: For both groundwater and surface water systems, each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant, or within the distribution system.)</p> <p>Verify that, if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions.</p> <p>Verify that each NTNC water system takes four consecutive quarterly samples for each contaminant during each compliance period starting with the initial compliance period.</p> <p>(NOTE: Systems serving more than 3300 persons that do not detect a contaminant in the initial compliance period may reduce sampling to two quarterly samples in 1 yr during each repeat compliance period.)</p> <p>(NOTE: Systems serving less than or equal to 3300 person that do not detect a contaminant in the initial compliance period may reduce sampling to one sample during each repeat compliance period.)</p> <p>Verify that, when an organic contaminant is detected (see Appendix 2-4), the system monitors quarterly at each sampling point that resulted in a detection.</p> <p>Verify that, if monitoring results in detection of one or more of aldicarb, aldicarb sulfone, aldicarb sulfoxide, heptchlor, and heptchlor epoxide, subsequent monitoring analyzes for all related contaminants.</p> <p>(NOTE: The state may reduce the number of samples required and/or the frequency of sampling.)</p>

**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>								
<p><b>2-64.</b> NTNC water systems are required to monitor for specific organic and inorganic contaminants (40 CFR 141.35 and 141.40(a) through 141.40(m)).</p>	<p>Verify that monitoring is being done for the following contaminants: chloroform; bromodichloromethane; bromoform; chlorodibromomethane; dibromomethane; m-dichlorobenzene; 1,1-dichloropropene; 1,1-dichloroethane; 1,1,2,2-tetrachloroethane; 1,3-dichloropropane; chloromethane; bromomethane; 1,2,3-trichloropropane; 1,1,1,2-tetrachloroethane; chloroethane; 2,2-dichloropropane; o-chlorotoluene; p-chlorotoluene; bromobenzene; 1,3-dichloropropane.</p> <p>Verify that surface water systems sample at points in the distribution system that are representative of each water source or at entry point to the distribution system after any application of treatment.</p> <p>Verify that, for surface water systems, the minimum number of samples taken is 1 yr of quarterly samples per water system.</p> <p>Verify that groundwater systems sample at points of entry to the distribution system, representative of each well after any application of treatment.</p> <p>Verify that for groundwater systems the minimum number of samples taken is one sample taken per entry point to the distribution system.</p> <p>Verify that initial monitoring was done by the dates specified in the following, and that all NTNC water systems repeat the monitoring every 5 yr after the specified dates:</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Number of persons served:</td><td style="width: 50%;">Monitoring to begin no later than:</td></tr> <tr> <td>Over 10,000</td><td>1 January 1988</td></tr> <tr> <td>3300 to 10,000</td><td>1 January 1989</td></tr> <tr> <td>less than 3300</td><td>1 January 1991.</td></tr> </table> <p>(NOTE: NTNC water systems may use monitoring data collected any time after 1 January 1983 to meet the requirements for unregulated monitoring, provided the monitoring program was consistent with these requirements. Additionally, the results of USEPA's Groundwater Supply Survey may be used in a similar manner for systems supplied by a single well.)</p> <p>(NOTE: The state may require monitoring of additional contaminants.)</p> <p>(NOTE: Instead of doing the monitoring required here, a NTNC water system serving fewer than 150 service connections may send a letter to the state by 1 January 1991 stating that the system is available for sampling.)</p> <p>Verify that the facility notifies the systems users of the availability of the results of sampling.</p> <p>Verify that the facility sends copies of the monitoring results within 30 days after public notification.</p>	Number of persons served:	Monitoring to begin no later than:	Over 10,000	1 January 1988	3300 to 10,000	1 January 1989	less than 3300	1 January 1991.
Number of persons served:	Monitoring to begin no later than:								
Over 10,000	1 January 1988								
3300 to 10,000	1 January 1989								
less than 3300	1 January 1991.								



**COMPLIANCE CATEGORY:**  
**DRINKING WATER MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>2-65.</b> Monitoring of specific contaminants at NTNCs must be completed by 31 December 1995 (40 CFR 141.35 and 141.40(n)).</p>	<p>Verify that the substances listed in Appendix 2-5 are monitored for by 31 December 1995.</p> <p>Verify that each NTNC water systems takes four consecutive quarterly samples for the unregulated organic contaminants listed in Appendix 2-5 at each sampling point and reports the results to the state.</p> <p>Verify that each NTNC water system takes one sample at each sampling points for the unregulated inorganic compounds listed in Appendix 2-5 and reports the results to the state.</p> <p>Verify that groundwater systems take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment and that each sample is taken from the same sampling point unless conditions make another sampling point more representative of each source or treatment.</p> <p>Verify that surface water systems, including systems with a combination of surface and ground sources, take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment and that each sample is taken from the same sampling point unless conditions make another sampling point more representative of each source or treatment.</p> <p>Verify that, if the system draws water from more than one source and the sources are combined before distribution, the system samples at the entry point to the distribution system during periods of normal operating conditions.</p> <p>Verify that the facility notifies the systems users of the availability of the results of sampling.</p>



**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:  
July 1995**

**NTNC WATER  
SYSTEMS**

**Lead and Copper**

2-66. Facilities with NTNC water systems must notify their users about an exceedence of lead in drinking water systems (40 CFR 141.85 and 141.90(f)).

Verify that public education materials are distributed in the following manner when a water system exceeds the lead action level based on tap water samples:

- the material is in the appropriate languages where languages other than English are spoken by a significant proportion of the population
- within 60 days after exceeding the lead action level:
  - notices are insert in each customer's water utility bill
  - information is provided to the editorial departments of the major daily and weekly newspapers circulated in the community
  - pamphlets or brochures are delivered to pertinent facilities, organizations, schools and medical centers
  - public service announcements are submitted to at least five of the radio and television stations broadcasting to the community.

Verify that the notification tasks are repeated every 6 mo for as long as a community water system exceeds the lead action level.

Verify that an NTNC water system delivers the public education materials by posting informational posters and distributing brochures.

Verify that an NTNC water system repeats distribution of information at least once each calendar year in which the system exceeds the lead action level.

(NOTE: The text of written materials and broadcast materials can be found in 40 CFR 141.85(a) and 141.85(b).)

Verify that, by 31 December, any water system that has had to issue public education materials submits a letter to the state indicating that the system has delivered the public education materials as required each year that the levels are exceeded.

**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>2-67.</b> NTNC water systems are required to meet specific standards for lead and copper action levels and reporting requirements when these levels are exceeded (40 CFR 141.80(a)(1) and 141.80(c)).</p>	<p>Verify that the concentration of lead does not exceed 0.015 mg/L in more than 10 percent of tap water samples collected during any monitoring period.</p> <p>Verify that the concentration of copper does not exceed 1.3 mg/L in more than 10 percent of tap water samples collected during any monitoring period.</p>
<p><b>2-68.</b> NTNC water systems are required to install and operate optimal corrosion control (40 CFR 141.80(d) and 141.82).</p>	<p>Verify that the water system has corrosion control that minimizes the lead and copper concentrations at users' taps while insuring that the treatment does not cause the water system to violate any of the national primary drinking water standards.</p> <p>(NOTE: Please see 40 CFR 141.81 for design details for corrosion control systems in relationship to the size of the water system.)</p>
<p><b>2-69.</b> NTNC systems that exceed the lead or copper action level are required to implement applicable source water treatment standards (40 CFR 141.80(e) and 141.83).</p>	<p>Verify that systems exceeding the lead or copper action level do lead and copper source water monitoring and make a treatment recommendation to the state within 6 mo after exceeding the lead or copper action rate.</p> <p>Verify that, if the state requires the installation of source water treatment, the installation is done within 24 mo after the state's initial response.</p> <p>Verify that followup tap water monitoring and source water monitoring is completed within 36 mo after the state's initial response.</p>
<p><b>2-70.</b> Facilities with NTNC water systems exceeding the lead action level after implementation of corrosion control and source water treatment requirements are required to replace lead service lines (40 CFR 141.80(f) and 141.84).</p>	<p>Verify that lead service line replacement is done according to the schedules and parameters outlined in 40 CFR 141.84.</p> <p>(NOTE: A system is not required to replace an individual lead service line if the lead concentration in all service line samples from that line is less than or equal to 0.015 mg/L.)</p> <p>(NOTE: Replacement of lead service lines can stop when the first draw samples that are collected meet the lead action levels during two consecutive monitoring periods and the system submits the results to the state.)</p>

**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>2-71.</b> Monitoring for lead and copper is required to start on a specified date and be done at a specified number of sites according to the chart in Appendix 2-7 (40 CFR 141.80(g), 141.86(a)(1), 141.86(a)(6), 141.86(a)(7), 141.86(c), and 141.86(d)).</p>	<p>Verify that sample sites have been selected and sampling started as of the dates indicated in Appendix 2-7.</p> <p>Verify that the sampling sites (tier 1 sampling) selected consist of building that contain copper pipes with lead solder installed after 1982 or contain lead pipe; and/or are served by a lead service line.</p> <p>(NOTE: If there are insufficient tier 1 sites, complete the sampling pool with sampling sites that contain copper pipes with lead solder installed before 1983.)</p> <p>Verify that the procedures for sampling and granting of variances found in 40 CFR 141.86 are followed.</p> <p>Verify that for the initial tap sample, all large water systems monitor during two consecutive 6-mo periods and all small and medium-size water systems monitor during each 6-mo period until:</p> <ul style="list-style-type: none"> <li>- the system exceeds the lead or copper action levels and is then required to implement corrosion control treatment</li> <li>- the system meets the lead and copper action levels during two consecutive 6-mo monitoring periods.</li> </ul> <p>(NOTE: A small or medium-sized water system that meets the lead and copper action levels during each of two consecutive 6-mo monitoring periods can reduce the frequency of sampling to once a year. If action levels are met during 3 consecutive years of monitoring, the frequency may be reduced to once every 3 yr.)</p> <p>Verify that, for monitoring after the installation of corrosion control and source water treatment, large systems with optimal corrosion control, by 1 January 1997 monitor during two consecutive 6-mo periods by 1 January 1998.</p> <p>Verify that, for monitoring after the installation of corrosion control and source water treatment, small or medium-size systems that install optimal corrosion control within 24 mo after being required to do so by the state, monitor during two consecutive 6-mo periods within 36 mo after being required to install optimal corrosion control treatment.</p> <p>Verify that, for monitoring after the installation of corrosion control and source water treatment required by the state, all systems that install state required systems, monitor during 2 consecutive months within 36 mo after the initial state requirement.</p> <p>Verify that, after the state has specified water quality parameter values for optimal corrosion control, that monitoring is done during each subsequent 6-mo monitoring period beginning when the state specified the optimal values.</p>

**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>2-72.</b> All large water systems and all small and medium size systems that exceed the lead or copper action level are required to monitor for water quality parameters in addition to lead and copper (40 CFR 141.40(h) and 141.87).</p> <p><b>2-73.</b> NTNC water systems that fail to meet the lead or copper action levels are required to meet specific monitoring requirements (40 CFR 141.80(h) and 141.88).</p>	<p>Verify that monitoring for water quality parameters is done according to Appendix 2-8.</p> <p>Verify that systems that exceed lead or copper action levels at the tap collect one source water sample from each entry point to the distribution system within 6 mo after the exceedence.</p> <p>Verify that systems which install source water treatment as required by the state collects an additional source water sample from each entry point to the distribution system during two consecutive 6-mo monitoring periods.</p> <p>Verify that the system monitors as follows when the state specifies maximum permissible source water levels:</p> <ul style="list-style-type: none"> <li>- once during the 3-yr compliance period for water systems using only groundwater</li> <li>- annually for water systems using surface water or a combination of surface and groundwater.</li> </ul> <p>(NOTE: Frequency of monitoring may be reduced by the state upon request.)</p>

**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>2-74.</b> In reference to lead and copper in NTNC water systems, all water systems are required to fulfill specific reporting requirements (40 CFR 141.90).</p> <p><b>2-75.</b> All NTNC systems subject to the lead and copper requirements are required to retain onsite all the original records of sampling data, analysis, reports, surveys, letters, evaluations, state determinations, and any other pertinent documents for at least 12 yr (40 CFR 141.80(j) and 141.91).</p>	<p>Verify that water systems report sampling results for all tap water samples within the first 10 days following the end of each monitoring period.</p> <p>Verify that water systems report the sampling results for all source water samples within the first 10 days following the end of each source water monitoring period.</p> <p>Verify that the following reports are submitted as applicable:</p> <ul style="list-style-type: none"> <li>- corrosion control treatment</li> <li>- source water treatment</li> <li>- lead service line replacement</li> <li>- demonstration of public education program.</li> </ul> <p>Verify that records are kept onsite for 12 yr.</p>





**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>TRANSIENT/ NONCOMMUNITY WATER SYSTEMS</b></p> <p><b>2-76.</b> Transient non-community water systems are required to conduct monitoring to determine compliance for nitrate and nitrite levels according to specific parameters (40 CFR 141.23(d) and 141.23(e)).</p>	<p>(NOTE: A transient water system must also meet the requirements for a public water system and for a noncommunity water systems. It is defined as a noncommunity water system that does not regulatory serve at least 25 of the same person over 6 mo per year.)</p> <p>Verify that transient noncommunity water systems monitor annually for nitrate starting 1 January 1993.</p> <p>Verify that, when the MCL for nitrate is exceeded, transient noncommunity water systems do repeat monitoring quarterly for at least 1 yr following any one sample in which the concentration exceeds more than 50 percent of the MCL.</p> <p>Verify that transient noncommunity water systems take one sample at each sampling point in the compliance period beginning 1 January 1993 and ending 31 December 1995 for nitrite.</p> <p>(NOTE: After the initial sample, systems where an analytical result for nitrite is less than 50 percent of the MCL will monitor at the frequency specified by the state.)</p> <p>Verify that transient noncommunity systems repeat monitoring for nitrites quarterly for at least 1 yr after any one sample is greater than 50 percent of the MCL.</p> <p>Verify that systems which are monitoring annually for nitrites take each subsequent sample during the quarters which previously resulted in the highest analytical result.</p> <p>Verify that, when nitrate or nitrite samples indicate an exceedence of the MCL, a confirmation sample is taken within 24 h of receipt of the results.</p> <p>(NOTE: If the system is unable to take a confirmation sample within 24 h, it must notify consumers of the exceedence.)</p>



**COMPLIANCE CATEGORY:**  
**DRINKING WATER MANAGEMENT**  
**Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**  
**July 1995**

**SOLE SOURCE  
AQUIFER**

**2-77.** Projects that may affect the recharge zone or stream flow source zone of a designated sole source aquifer are regulated (40 CFR 149.103 and 149.104).

(NOTE: Currently the only Federally designated sole source aquifers are the Edwards Aquifer in the San Antonio, TX area and the Buried Valley Aquifer System in southwest Ohio.)

Determine if the facility is located near a designated sole source aquifer.

Determine if the facility uses water from the aquifer and what impact water use may have on Federally listed endangered species that are dependent on the aquifer.

Verify that the facility maintains a list of projects for which environmental impact statements will be prepared.

Verify that, if any projects may potentially cause direct or indirect contamination through its recharge zone, a petition has been submitted to the USEPA regional administrator.



## Appendix 2-1

### Primary Drinking Water Standards for Organic Contaminants

**Table 1: MCLs Applicable to Community Water Systems  
(40 CFR 141.12)**

Contaminant	mg/L
Total Trihalomethanes (TTHM) (the sum of the concentrations of bromodichloromethane, dibromochloromethane, tribromomethane (bromoform) and trichloromethane (chloroform))	0.10

(NOTE: The standard for TTHM only applies to community water systems serving greater than 10,000 individuals which add a disinfectant during treatment).

**Table 2: MCLs Applicable to Community and Nontransient,  
Noncommunity Water Systems (40 CFR 141.61(a))**

Contaminant	mg/L
1,1-Dichloroethylene	0.007
1,1,1-Trichloroethane	0.20
1,2-Dichloroethane	0.005
1,2-Dichloropropane	0.005
Benzene	0.005
Carbon Tetra chloride	0.005
cis-1,2-Dichloroethylene	0.07
Ethylbenzene	0.7
Monochlorobenzene	0.1
O-Dichlorobenzene	0.6
para-Dichlorobenzene	0.075
Styrene	0.1
Tetrachloroethylene	0.005
Toluene	1.0
trans-1,2-Dichloroethylene	0.1
Trichloroethylene	0.005
Vinyl chloride	0.002
Xylenes (total)	10.0
Dichloromethane	0.005*
1,2,4-Trichlorobenzene	.07*
1,1,2-Trichloroethane	.005*

\* The effective date for these MCLs is 17 January 1994

(continued)

## Appendix 2-1 (continued)

**Table 3: MCLs For Synthetic Organic Contaminants Applicable to Community Water Systems and Nontransient, Noncommunity Water Systems  
(40 CFR 141.61(c))**

Contaminant	mg/L
Alachlor	0.002*
Aldicarb	0.003*
Aldicarb sulfoxide	0.004*
Aldicarb sulfone	0.002
Atrazine	0.003
Carbofuran	0.04
Chlordane	0.002
Dibromochloropropane	0.0002
2,4-D	0.07
Ethylene dibromide	0.00005
Heptachlor	0.0004
Heptachlor epoxide	0.0002
Lindane	0.0002
Methoxychlor	0.04
Pentachlorophenol	0.001
Polychlorinated biphenyls	0.0005
Toxaphene	0.003
2,4,5-TP	0.05
Benzo(a)pyrene	0.0002
Delapon	0.2
Di(2-ethyhexyl) adipate	0.4
Di(2-ethyhexyl) phthalate	0.006
Dinoseb	0.007
Diquat	0.02
Endothall	0.1
Endrin	0.002
Glyphosate	0.7
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05
Oxamyl (Vydate)	0.2
Picloram	0.5
Simazin	0.004
2,3,7,8,-TCDD (Dioxin)	3. x 10 <sup>-8</sup>

\*The MCLs for these compounds have been postponed indefinitely in the 27 May 1992 Federal Register.

## Appendix 2-2

### Primary Drinking Water Standards for Inorganic Contaminants

**Table 1: MCLs Applicable to Community Water Systems  
(40 CFR 141.11, 141.12(c), and 141.62(b)(1))**

Contaminant	mg/L
Arsenic	0.05
Fluoride	4.0
Total Trihalomethanes	0.10*

\* This MCL only applies to community water systems which serve a population of 10,000 individuals or more and which add a disinfectant (oxidant) to the water in any part of the drinking water treatment process.

**Table 2: MCLs Applicable to Community Water Systems and  
Nontransient, Noncommunity Water Systems**

(40 CFR 141.62(b)(2) through 141.62(b)(6) and 141.62(b)(10) through 141.62(b)(15))

Contaminant	mg/L
Asbestos	7 million fibers/L (longer than 10 micrometers)
Barium	2.0
Cadmium	0.005
Chromium	0.1
Mercury	0.002
Selenium	0.05
Antimony	0.006
Beryllium	0.004
Cyanide (as free Cyanide)	0.2
Nickel	0.1
Thallium	0.002

(continued)

## Appendix 2-2 (continued)

**Table 3: MCLs Applicable to Community, Nontransient,  
Noncommunity and Transient Noncommunity Water Systems  
(40 CFR 141.62(b)(7) through 141.62(b)(9))**

Contaminant	mg/L
Nitrate (as N)	10.0
Nitrite (as N)	1.0
Total Nitrate and Nitrite (as N)	10.0



## Appendix 2-3

### Detection Limitations for Inorganic Contaminants

(40 CFR 141.23(a))

Contaminant	MCL (mg/L)	Analytical Method	Detection Limit (mg/L)
Antimony	0.006	Atomic Absorption Furnace	0.003
		Atomic Absorption: Platform	0.0008 <sup>5</sup>
		ICP Mass spectrometry	0.0004
		Hydride Atomic Absorption	0.001
Asbestos	7 MFL <sup>1</sup>	Transmission Electron Microscopy	0.01 million fibers/L
Barium	2.0	Atomic Absorption; furnace technique	0.002
		Atomic Absorption; direct aspiration	0.1
		Inductively Coupled Plasma	0.002(0.001)
Beryllium	0.004	Atomic Absorption, Furnace	0.0002
		Atomic Absorption: Platform	0.00002 <sup>5</sup>
		Inductively Coupled Plasma <sup>3</sup>	0.0003
		ICP Mass Spectrometry	0.0003
Cadmium	0.005	Atomic Absorption; furnace technique	0.0001
		Inductively Coupled Plasma <sup>2</sup>	0.001
Chromium	0.1	Atomic Absorption; furnace technique	0.001
		Inductively Coupled Plasma	0.007
			(0.001)
Cyanide	0.2	Distillation, Spectrophotometric <sup>3</sup>	0.02
		Distillation, Automated,	0.005
		Spectrophotometric <sup>3</sup>	0.05
		Distillation, Selective Electrode <sup>3</sup>	0.02
		Distillation, Amenable, Spectrophotometric <sup>4</sup>	
Mercury	0.002	Manual Cold Vapor Technique	0.0002
		Automated Cold Vapor Technique	0.0002
Nickel	0.1	Atomic Absorption, Furnace	0.001
		Atomic Absorption: Platform	0.0006 <sup>5</sup>
		Inductively Coupled Plasma <sup>3</sup>	0.005
		ICP Mass Spectrometry	0.0005
Nitrate	10 as N	Manual Cadmium Reduction	0.01
		Automated Hydrazine Reduction	0.01
		Automated Cadmium Reduction	0.05
		Ion Selective Electrode	1.0
		Ion Chromatography	0.01
Nitrite	1 as N	Spectrophotometric	0.01
		Automated Cadmium Reduction	0.05
		Manual Cadmium Reduction	0.01
		Ion Chromatography	0.004
Selenium	0.05	Atomic Absorption; furnace	0.002
		Atomic Absorption; gaseous hydride	0.002

(continued)

Contaminant	MCL (mg/L)	Analytical Method	Detection Limit (mg/L)
Thallium	0.002	Atomic Absorption Furnace	0.001
		Atomic Absorption: Platform	0.0007 <sup>5</sup>
		ICP-Mass Spectrometry	0.0003

<sup>1</sup> MFL = million fibers per liter > 10 ppm.

<sup>2</sup> Using a 2x preconcentration step as noted in Method 200.7. Lower MDLs may be achieved by using

a 4x preconcentration.

<sup>3</sup> Screening method for total cyanides.

<sup>4</sup> Measures "free" cyanides.

<sup>5</sup> Lower MDLs are reported using stabilized temperature graphite furnace atomic absorption.

(continued)

## Appendix 2-4

### Detection Limitations (40 CFR 141.24(h)(18))

Contaminant	Detection Limit
Alachlor	0.0002
Aldicarb	0.0005
Aldicarb sulfoxide	0.0005
Aldicarb sulfone	0.0008
Atrazine	0.0001
Benzo[a]pyrene	0.00002
Carbofuran	0.0009
Chlordane	0.0002
Dalapon	0.001
Dibromochloropropane (DBCP)	0.00002
Di (2-ethylhexyl) adipate	0.0006
Di (2-ethylhexyl) phthalate	0.0006
Dinoseb	0.0002
Diquat	0.0004
2,4-D	0.0001
Endothall	0.009
Endrin	0.00001
Ethylene dibromide (EDB)	0.00001
Glyphosate	0.006
Heptachlor	0.00004
Heptachlor epoxide	0.00002
Hexachlorobenzene	0.0001
Hexachlorocyclopentadiene	0.0001
Lindane	0.00002
Methoxychlor	0.0001
Oxamyl	0.002
Picloram	0.0001
Pentachlorophenol	0.00004
Polychlorinated biphenyls	0.0001
Simazine	0.00007
Toxaphene	0.001
2,3,7,8-TCDD (Dioxin)	0.000000005
2,4,5-TP	0.0002



## **Appendix 2-5**

### **Unregulated Organic and Inorganic Contaminants (40 CFR 141.40(n)(11) and 141.40(n)(12))**

#### **Organic Contaminants**

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Aldicarb

Aldicarb Sulfone

Aldicarb Sulfoxide

Aldrin

Butachlor

Carbaryl

Dicamba

Dieldrin

3-Hydroxycarbofuran

Methomyl

Metolachlor

Metribuzin

Propachlor

#### **Inorganic Contaminants**

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Sulfate



## Appendix 2-6

### Coliform Bacteria Sampling Frequency (40 CFR 141.21(a)(2))

Population Served Per Month	Minimum Number of Samples Per Month
25 to 1000	1
1001 to 2500	2
2501 to 3300	3
3301 to 4100	4
4101 to 4900	5
4901 to 5800	6
5801 to 6700	7
6701 to 7600	8
7601 to 8500	9
8501 to 12,900	10
12,901 to 17,200	15
17,201 to 21,500	20
21,501 to 25,000	25
25,001 to 33,000	30
33,001 to 41,000	40
41,001 to 50,000	50
50,001 to 59,000	60
59,001 to 70,000	70
70,001 to 83,000	80
83,001 to 96,000	90
96,001 to 130,000	100
130,001 to 220,000	120
220,001 to 320,000	150
320,001 to 450,000	180
450,001 to 600,000	210
600,001 to 780,000	240
780,001 to 970,000	270
970,001 to 1,230,000	300
1,230,001 to 1,520,000	330
1,520,001 to 1,850,000	360
1,850,001 to 2,270,000	390
2,270,001 to 3,020,000	420
3,020,001 to 3,960,000	450
3,960,001 or more	480





## Appendix 2-7

### Monitoring and Sampling Parameters for Lead and Copper in Drinking Water (40 CFR 141.86(c) and 141.86(d))

#### Number of Sampling Sites Required

System Size (people served)	No. of sites (standard monitoring)	No. of sites (reduced monitoring)
> 100,000	100	50
10,001 - 100,000	60	30
3301 - 10,000	40	20
501 - 3300	20	10
101 - 500	10	5
≤ 100	5	5

#### Dates for the Start of Monitoring

System Size (people served)	First 6-mo monitoring period begins on:
> 50,000	1 Jan 1992
3301 - 50,000	1 July 1992
≤ 3300	1 July 1993



## Appendix 2-8

### Monitoring Requirements for Water Quality Parameters (40 CFR 141.87)

(NOTE: This table is for illustrative purposes, consult the text of the regulation for actual details).

Monitoring Period	Parameters <sup>1</sup>	Location	Frequency
Initial Monitoring	pH, alkalinity, orthophosphate or silica <sup>2</sup> , calcium, conductivity, temperature.	Taps and at entry points in distribution system	Every 6 mo
After Installation of Corrosion Control	pH, alkalinity, orthophosphate or silica, calcium <sup>3</sup> .	Taps	Every 6 mo
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as a part of corrosion control), inhibitor dosage rate and inhibitor residual <sup>4</sup> .	Entry points to distribution system	Biweekly
After State Specifies Parameter Values for Optimal Corrosion Control	pH, alkalinity, orthophosphate or silica <sup>2</sup> , calcium <sup>3</sup> .	Taps	Every 6 mo
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as a part of corrosion control), inhibitor dosage rate and inhibitor residual <sup>4</sup> .	Entry points to distribution system	Biweekly
Reduced Monitoring	pH; alkalinity, orthophosphate or silica <sup>2</sup> , calcium <sup>3</sup> .	Taps	Every 6 mo at a reduced number of sites
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as a part of corrosion control), inhibitor dosage rate and inhibitor residual <sup>4</sup> .	Entry points to distribution system	Biweekly

1. Small and medium-size systems have to monitor for water quality parameters only during monitoring periods in which the system exceeds the lead or copper action level.
2. Orthophosphates must be measured only when an inhibitor containing a phosphate component is used. Silica must be measured only when an inhibitor containing silicate compounds is used.

(continued)

3. Calcium must be measured only when calcium carbonate stabilization is used as a part of corrosion control.
4. Inhibitor dosage rates and inhibitor residual concentrations (orthophosphates or silica) must be measured only when an inhibitor is used.

<b>FACILITY:</b>	<b>COMPLIANCE CATEGORY:</b> <b>DRINKING WATER MANAGEMENT</b> Fish and Wildlife Service	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> NA    C    RMA	<b>REVIEWER COMMENTS:</b>		

## **SECTION 3**

### **Hazardous Materials Management**

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**The contents of this section are the minimum requirements the auditor must review. The auditor must also review applicable state and local regulations.**

## SECTION 3

### HAZARDOUS MATERIALS MANAGEMENT

#### A. Applicability

This section primarily addresses the proper storage and handling of chemicals and the spill contingency and response requirements related to hazardous materials. Oil, pesticides, and asbestos are hazardous materials which require special management practices at FWS facilities, and are addressed in separate sections. Radioactive substances and the general category of hazardous wastes are also not included in this section. This section does not focus on individual hazardous chemicals or substances used, but deals with the generic requirements and management practices (MPs) associated with minimizing impacts on the environment due to spills or releases of hazardous materials because of improper storage and handling.

All underground storage tank (UST) regulations that apply to hazardous materials have been consolidated into Section 9, Underground Storage Tank (UST) Management.

#### B. Federal Legislation

- *The Occupational Safety and Health Act (OSHA)* of 1970. This act, last amended in November 1990, 29 U.S. Code (USC) 651-678, is a Federal statute which governs the issues related to occupational safety and health. The purpose and policy of this act is to assure every working man and woman in the nation safe and healthful working condition and to preserve our human resources by, among other things, providing for the development and publication of occupational safety and health standards, providing for an effective enforcement program, and providing for appropriate reporting procedures with respect to occupational safety and health which procedures will help achieve the objectives of this Act and accurately describe the nature of the occupational safety and health (29 USC 651(b)(9)(10)(12)).
- *The Hazardous Materials Transportation Act* of 1975. This act, as last amended in November 1990, 49 USC 1801-1819, et al, is the Federal legislation which governs the transportation of hazardous materials in the nation. The policy of Congress is to improve the regulatory and enforcement authority of the Secretary of Transportation to protect the Nation adequately against the risks to life and property which are inherent in the transportation of hazardous materials in commerce (49 USC 1801).
- *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)* of 1980. This act was amended by the *Superfund Amendments and Reauthorization Act (SARA)* of 1986, 42 USC 9601-11050, 10 USC 2701-2810 et. al. CERCLA/SARA regulates the prevention, control, and compensation relating to environmental pollution.
- *The Emergency Planning and Community Right-to-Know Act (EPCRA)* of 1986. This act was designed to promote emergency planning and preparedness at both the state and local level. It provides citizens and local governments with information regarding the

potential hazards in their community. EPCRA requires the use of emergency planning and designates state and local governments as recipients for information regarding chemicals and toxins used in the community.

- Executive Order (EO) 12088, *Federal Compliance with Pollution Standards*. This EO of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the Agency funds meet applicable Federal, state, and local environmental requirements and for correcting situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.
- EO 12856, *Federal Compliance With Right-to-Know Laws and Pollution Prevention Requirements*. This EO requires the heads of Federal agencies to develop a written pollution prevention strategy for their agencies. Military departments are covered under the auspices of the Department of Defense (DOD). The head of each agency shall ensure that each of its covered facilities develops a written pollution prevention plan no later than the end of 1995. Federal agencies are required to conduct audits of their facilities as necessary to ensure development of these plans and of the facilities pollution prevention program. Each Federal agency will also develop voluntary goals to reduce the agency's total releases of toxic chemicals to the environment, and offsite transfers of such chemicals for treatment and disposal are publicly reported.
- The National Fire Code, *Flammable and Combustible Liquids Code*, National Fire Protection Association (NFPA) 30, prohibits the storage of Class I and Class II liquids in plastic containers in general-purpose warehousing.
- Federal regulations used to develop the checklist include:
  - EO 12088, *Federal Compliance with Pollution Control Standards*.
  - EO 12856, *Federal Compliance with Right-To-Know Laws and Pollution Prevention Requirements*.
  - 29 CFR 1910, *Occupational Safety and Health Standards*.
  - 40 CFR 300, *National Oil and Hazardous Substances Pollution Contingency Plan*.
  - 40 CFR 302, *Reportable Quantities of Hazardous Materials (Table 302.4)*.
  - 40 CFR 355, *Emergency Planning and Notification*.
  - 40 CFR 370, *Hazardous Chemical Reporting: Community Right-To-Know*.
  - 40 CFR 372, *Toxic Chemical Release Reporting and Community Right-To-Know*.
  - 49 CFR 171, *General Information, Regulations, and Definitions*.
  - 49 CFR 172, *Hazardous Materials Tables, Hazardous Materials Communications Requirements and Emergency Response Information Requirements*.
  - 49 CFR 173, *Shippers, General Requirements for shipments and Packaging*.
  - 49 CFR 178, *Specifications by Packaging*.
  - 49 CFR 179, *Specifications for Tank Cars*.
  - NFPA, *Fire Protection Guide of Hazardous Materials*.



### C. State/Local Regulations

Hazardous materials may be regulated on the state level as well as local agencies (county/city fire departments) who may require flammable/combustible materials to meet certain storage requirements. Usually, these local ordinances will follow the NFPA *Fire Protection Guide on Hazardous Materials* (Pamphlets 325A, 325M, 491, 491F, and 704M).

### D. FWS/DOI Manuals

No applicable manuals final as of the publication of this handbook.

### E. Key Compliance Requirements

- **Planning and Documentation** - Facilities should maintain a master listing of hazardous materials storage sites. When the facility needs outside fire protection help, it should tell the local fire department the types of hazardous chemicals it uses, the areas where it uses them, what it uses them for, and the amount it uses. Facilities are required to have Material Safety Data Sheet (MSDS) files for each hazardous chemical it stores and uses, not including such items as hazardous waste, tobacco, or drugs and cosmetics meant for personal use (29 CFR 1910.1200(b) and 1910.1200(g)).
- **Personnel Training** - Facilities are required to provide all employees with written information about hazardous chemicals to which they are exposed. Personnel who work with hazardous materials are required to be trained in the use of and potential hazards of such materials. All employees and supervisors working on sites exposed to hazardous materials or other hazards are required to be trained before engaging in these activities (29 CFR 1910.1200).
- **Pollution Prevention** - FWS facilities are required to prepare Pollution Prevention Plans by 31 December 1995. Additionally, it is Service policy that facilities will conduct their activities in a manner to prevent pollution through the use of waste source reduction and waste recycling.
- **Hazardous Substance Release Reporting** - FWS facilities are required to notify the National Response Center (NRC) immediately if it releases hazardous substances in excess of or equal to reportable quantities (RQs) (see Appendix 3-1). Facilities with continuous and stable releases have limited notification requirements. If a facility produces, uses, or stores extremely hazardous chemicals, and has a reportable release of these substances, it is required to notify the community emergency coordinator or local planning committee or Governor if there is no planning committee (40 CFR 302.1 through 302.6, 302.8, and 355.40).
- **Emergency Planning** - A facility with extremely hazardous substances in amounts equal to or greater than the limits found in Appendix 3-1 are required to notify the emergency response commission and designate a representative to participate in local emergency planning (40 CFR 355.10 through 355.40 and 355 Appendix A).
- **Right-to-Know Requirements** - Facilities required by OSHA to have an MSDS for a hazardous chemical are required to submit the MSDSs to the emergency commission and fire

department with jurisdiction over the facility. New MSDSs will be submitted within 3 mo after discovery of significant new information (40 CFR 370.20 through 370.28).

- **Hazardous Materials Storage** - Containers for hazardous chemicals are required to be labeled or tagged with the identity of the substance and appropriate warning markings. Areas where hazardous materials are stored or used around the facility are required to be kept free from accumulations of materials that create a hazard, such as leaking containers, or a placement of containers in a manner that would create hazards such as tripping, fire, or pests. Substances that together may create a fire hazard must be separated (29 CFR 1910.176(c), 1910.1200(b), and 1200(f)).
- **Hazardous Materials in Laboratories** - Facilities that use hazardous chemicals in laboratories are required to have a Chemical Hygiene Plan which is reviewed annually. Such facilities are also required to provide employees with information and training about the hazardous chemicals in their work areas. Records about the exposure of employees are to be kept along with medical records (29 CFR 1910.1450(e), 1910.1450(f), 1910.1450(h), and 1910.1450(j)).
- **Storage of Flammable/Combustibles** - In general, containers of flammable combustible liquids are to be stored and handled so as to not damage the container or label, block exits, or create a fire hazard (29 CFR 1910.106(d)).
- **Flammable Combustible Storage Cabinets** - Storage cabinets are to be fire resistant and labeled **FLAMMABLE - KEEP FIRE AWAY**. No more than 60 gal [227.12 L] of Class I or Class II liquids and no more than 120 gal [454.23 L] of Class III liquids can be stored in a cabinet (29 CFR 1910.106(d)(3)).
- **Flammable Combustible Storage Rooms** - Storage rooms inside a building are to be fire resistant and have a raised sill or ramp to prevent the flow of spilled material from exiting the room. Ventilation and clear aisles must be provided and dispensing must be done by an approved pump or self-closing faucet (29 CFR 1910.106(d)(4)).
- **Flammable/Combustible Warehouses or Storage Buildings** - These structures will have 3 ft [0.91 m] wide aisles for access to doors, windows, or standpipe connections. Materials will be stacked using pallets or dunnage when needed for stabilization and fire protection must be provided (29 CFR 1910.106(d)(5)(iv)).
- **Outside Storage of Flammable Combustible Liquids** - Containers of flammable/combustible liquids can be stored outside if no more than 1100 gal [4163.95 L] of liquid are stored adjacent to a building. More than 1100 gal [4163.95 L] can be stored if there are 10 ft [3.05 m] or more between buildings and the nearest flammable container. The storage area must be graded to divert spill or surrounded by a curb (29 CFR 1910.106(d)(6)).
- **Storage of Flammable/Combustibles in Industrial Areas** - Specific guidelines, requirements, or operating standards apply wherever flammable/combustible materials are stored, dispensed, or used in industrial plants, are in incidental storage, or in use in unit operations. This includes availability of portable fire extinguishers, precautions being taken to prevent ignition, and use of maintenance and operating practices to control leakage and prevent accidental escape of flammable/combustible liquids (29 CFR 1910.106(e)(2) through 1910.106(e)(9)).

- **Flammable Combustible Liquid Storage Tanks** - Storage tanks are to be built of steel except in certain circumstances. Outside aboveground tanks for flammable liquids are to meet requirements for distance between tanks, firefighting access, and containment. When flammable vapor may be present from storage tanks, heat sources will be kept from the tanks. Tanks are required to have been strength-tested before being used (29 CFR 1910.106(b)).
- **Compressed Gases** - Regardless of where the cylinders are stored, NO SMOKING signs should be posted and actions taken to prevent fire. Compressed gases are required to be stored according to the Compressed Gas Association Pamphlet P-1-1965 (29 CFR 1910.101).
- **Acid Storage** - Bulk storage of acids should be done in buildings that are one story in height with ventilation. Safety equipment must be available along with fire protection. The building is to be labeled NO SMOKING and heated to prevent freezing (MP).
- **Hazardous Materials Transportation** - The regulations in Title 49, Subchapter C of the CFR, detail requirements for the transportation of hazardous materials. 49 CFR 171.1(c) stipulates that these requirements apply when materials are being transported in commerce. According to a representative from the Department of Transportation (DOT), commerce is defined in terms of making a profit in this instance, therefore, Subchapter C does not apply to Federal agencies.
- **Recordkeeping** - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

#### **F. Key Compliance Definitions**

- **Aerosol** - a material which is dispensed from its container as a mist, spray, or foam by a propellant under pressure (29 CFR 1910.106(a)(1)).
- **Approved** - listed or approved by Underwriters Laboratories, Inc., Factory Mutual Engineering Corporation, The Bureau of Mines, National Institute of Occupational Safety and Health (NIOSH), The American National Standards Institute (ANSI), NFPA, or other nationally recognized agencies which list, approve, test or develop specifications for equipment to meet fire protection, health, or safety requirements (29 CFR 1910.106(a)(35)).
- **Atmospheric Tank** - a storage tank which has been designed to operate at pressures from atmospheric through 0.5 psig (29 CFR 1910.106(a)(2)).
- **Barrel** - a volume of 42 U.S. gallons (29 CFR 1910.106(a)(33)).
- **Basement** - a story of a building or structure having one-half or more of its height below ground level and to which access for fire fighting purposes is unduly restricted (29 CFR 1910.106(a)(4)).
- **Boiling Point** - the temperature at which a liquid starts to boil when at atmospheric pressure (14.7 psia [760 mm], as determined by ASTM test D-86-72) (29 CFR 1910.106(a)(5)).

- *Bulk Plant* - that portion of the property where flammable or combustible liquids are received by tank vessel, pipelines, tank car, or tank vehicle, and are stored or blended in bulk for the purpose of distributing such liquids by tank vessel pipeline, car, tank vehicle, or container (29 CFR 1910.106(a)(7)).
- *Closed Container* - a container so sealed with a lid or other closing device that neither liquid and/or vapor will escape from it at ordinary temperatures (29 CFR 1910.106(a)(9)).
- *Combustible Liquid* - a liquid having a flashpoint at or above 100 °F (37.8 °C). Combustible liquids are categorized as Class II or Class III liquids and are further subdivided as follows (29 CFR 1910.106(a)(18)):
  1. Class II liquids are those having a flashpoint at or above 100 °F (37.8 °C), and below 140 °F (60 °C) except any mixture having components with flashpoints of 200 °F (93.3 °C) or higher, the volume of which makes up 99 percent or more of the total volume of the mixture.
  2. Class III A liquids are those having flashpoints at or above 140 °F (60 °C), and below 200 °F (93.3 °C) except any mixture having components with flashpoints of 200 °F (93.3 °C) or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.
  3. Class III B liquids are those having flashpoints at or above 200 °F (93.3 °C).
- *Extremely Hazardous Substances* - all substances listed in Appendices A and B in 40 CFR 355 (see the column labeled in Appendix 3-1) (40 CFR 355.20).
- *Fire Area* - that portion of a building separated from the remainder by construction having a rated fire resistance of at least 1 h and having all communicating openings properly protected by an assembly having a fire resistance rating of at least 1 h (29 CFR 1910.106(a)(12)).
- *Flammable Aerosol* - an aerosol that is required to be labeled FLAMMABLE under the *Federal Hazardous Substance Labeling Act* (15 USC 1261). These aerosols are considered Class IA liquids (29 CFR 1910.106(a)(19)).
- *Flammable Liquid* - a liquid with a flashpoint below 100 °F (37.8 °C) except any mixture having components with flashpoints of 100 °F (37.8 °C) or higher, the total of which make up 99 percent or more of the total volume of the mixture. Flammable liquids are categorized as Class 1 liquids, and are further subdivided as follows (29 CFR 1910.106(a)(19)):
  1. Class IA are those that have a flashpoint below 73 °F (22.8 °C) and boiling point below 100 °F (37.8 °C)
  2. Class IB are those that have flashpoints below 73 °F (22.8 °C) and boiling points at or above 100 °F (37.8 °C)
  3. Class IC are those that have flashpoints at or above 73 °F (22.8 °C) and below 100 °F (37.8 °C).
- *Flashpoint* - the minimum temperature at which a liquid gives off vapor in sufficient concentration to form an ignitable mixture with air near the surface of the liquid. Flashpoints are established using several standard closed cup test methods (29 CFR 1910.106(a)(14)).
- *Hazardous Chemical* - in relationship to laboratories, a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with estab-

lished scientific principles that acute or chronic health effects may occur in exposed employees (29 CFR 1910.1450(b)).

- *Hazardous Substance* - any substance designated pursuant to 40 CFR 302 (see the column titled Hazardous Substance Reportable Quantity (RQ) in Appendix 3-1) (40 CFR 302.3).
- *Institutional Occupancy* - the occupancy or use of a building or structure or any portion thereof by persons harbored or detained to receive medical, charitable or other care or treatment or by persons involuntarily detained (29 CFR 1910.106(a)(16)).
- *Laboratory* - a facility where the laboratory use of hazardous chemicals occurs. It is a workplace where relatively small quantities of hazardous chemicals are used on a nonproduction basis (29 CFR 1910.1450(b)).
- *Laboratory Scale* - work with substances in which the containers used for reactions, transfers, and other handling of substances are designed to be easily and safely manipulated by one person (29 CFR 1910.1450(b)).
- *Laboratory Use of a Hazardous Chemical* - handling or use of such chemicals in which all of the following conditions are met (29 CFR 1910.1450(b)):
  1. chemical manipulations are carried out on a laboratory scale
  2. multiple chemical procedures or chemicals are used
  3. the procedures involved are not part of a production process, nor in any way simulate a production process
  4. protective laboratory practices and equipment are available and in common use to minimize the potential for employee exposure to hazardous chemicals.
- *Liquid* - any material with a fluidity greater than that of 300 penetration asphalt when tested in accordance with ASTM Test D-5-73. When not otherwise identified, the term liquid will include both flammable and combustible liquid (29 CFR 1910.106(a)(17)).
- *Low Pressure Tank* - a storage tank which has been designed to operate at pressures above 0.5 psig but not more than 15 psig (29 CFR 1910.106(a)(21)).
- *Management Practice (MP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- *Material Safety Data Sheet (MSDS)* - written or printed material which contains information on hazardous chemicals such as common name, physical hazards, health hazards (29 CFR 1910.1200(c)).
- *Office Occupancy* - the occupancy or use of a building or structure or any portion thereof for the transaction of business, or the rendering or receiving of professional services (29 CFR 1910.106(a)(24)).
- *Portable Tank* - a closed container having a liquid capacity over 60 gal [227.12 L] and not intended for fixed installation (29 CFR 1910.106(a)(25)).
- *Pressure Vessel* - a storage tank or container designed to operate at pressures above 15 psig (29 CFR 1910.106(a)(29)).

- *Protection for Exposure* - adequate fire protection for structures on property adjacent to tanks, where there are employees of the establishment (29 CFR 1910.106(a)(27)).
- *Safety Can* - an approved container of not more than 5 gal [18.95 L] capacity, having a spring-closing lid, spout cover and so designed that it will safely relieve internal pressure when subjected to fire exposure (29 CFR 1910.106(a)(29)).
- *Select Carcinogens* - any substance that meets one of the following criteria (29 CFR 1910.1450(b)):
  1. it is regulated by OSHA as a carcinogen
  2. it is listed under the category "known to be carcinogens" and the Annual Report on Carcinogens published by the National Toxicology Program (NTP)
  3. it is listed under Group 1 (carcinogenic to humans) by the International Agency for Research on Cancer Monographs (IARC)
  4. it is listed in either Group 2A or 2B by IARC or under the category "reasonably anticipated to be carcinogens" by NTP, and causes statistically significant tumor incidences in experimental animals under specific situations.
- *Toxic Chemical* - a chemical or chemical category listed in 40 CFR 372.65 (see the column titled Toxic Chemicals in Appendix 3-1) (40 CFR 372.3).
- *Vapor Pressure* - the pressure, measured in psia, exerted by a volatile liquid (29 CFR 1910.106(a)(30)).

**HAZARDOUS MATERIALS MANAGEMENT**  
**GUIDANCE FOR CHECKLIST USERS**

	<b>REFER TO CHECKLIST ITEMS:</b>	<b>REFER TO PAGE NUMBER:</b>
All Facilities	3-1 through 3-11	3-13
Personnel Training	3-12 and 3-13	3-19
Pollution Prevention	3-14 and 3-15	3-23
Hazardous Materials in Laboratories	3-16 through 3-19	3-25
Releases	3-20 through 3-24	3-29
Emergency Planning	3-25	3-33
Right-To-Know	3-26 through 3-28	3-35
Flammable/Combustible Liquids Storage		
General	3-29 through 3-387	3-37
Industrial Areas	3-38 through 3-40	3-43
Tanks	3-41 through 3-45	3-45
Compressed Gases Storage	3-46 and 3-47	3-49
Acid Storage	3-48	3-51
Transportation	3-49 through 3-60	3-53





## **HAZARDOUS MATERIALS MANAGEMENT**

### **Records To Review**

- Hazardous Substance Spill Control and Contingency Plan
- Spill records
- Emergency plan documents
- MSDSs
- Inventory records
- Hazardous substance release reports
- Shipping papers
- Training records
- Placarding of hazardous materials
- Hazardous Communication Program
- Chemical Hygiene Plan (labs)

### **Physical Features To Inspect**

- Hazardous material storage areas
- Shop activities
- Shipping and receiving area



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>ALL FACILITIES</b></p> <p><b>3-1.</b> The current status of any ongoing or unresolved consent orders, compliance agreements, notices of violation (NOVs), inter-agency agreements, or equivalent state enforcement actions is required to be examined (a finding under this checklist item will have the enforcement action/identifying information as the citation).</p> <p><b>3-2.</b> FWS facilities are required to comply with state and local regulations (EO 12088, Section 1-1).</p> <p><b>3-3.</b> Facilities are required to meet regulatory requirements issued since the finalization of the handbook (a finding under this checklist item will have the citation of the new regulation as a basis of finding).</p>	<p>Determine if noncompliance issues have been resolved by reviewing a copy of the previous report, consent orders, compliance agreements, NOVs, inter-agency agreements, or equivalent state enforcement actions.</p> <p>Verify that the facility is complying with state and local requirements.</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies.</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- transportation of hazardous materials</li> <li>- notification requirements</li> <li>- response plan requirements</li> <li>- spill response requirements.)</li> </ul> <p>Determine if any new regulations concerning hazardous materials have been issued since the finalization of the handbook.</p> <p>Verify that the facility is in compliance with newly issued regulations.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>3-4.</b> FWS facilities should report all NOV's to the Region and the Service Pollution Control Office (SPCO) (MP).</p>	<p>Determine if the facility has received an NOV relating to hazardous materials.</p> <p>Verify that the NOV was reported to the Region and the SPCO.</p>
<p><b>3-5.</b> A master listing of all hazardous materials storage sites should be maintained at the facility (MP).</p>	<p>Determine the locations of all hazardous materials storage areas on the facility by interviewing staff.</p> <p>(NOTE: Hazardous constituents of expired materials discovered during the inventory process, or at any other time, should be identified prior to disposal, see appropriate checklist item in Hazardous Waste Management.)</p>
<p><b>3-6.</b> Facilities should be receiving specific information from tenant operations (MP).</p>	<p>Verify that FWS facilities with tenant operations receive the following information from their tenants:</p> <ul style="list-style-type: none"> <li>- information on spills</li> <li>- pesticide application information</li> <li>- copies of permits</li> <li>- EPCRA reports</li> <li>- hazardous waste disposal amounts and destinations</li> <li>- notices of violations</li> <li>- location of hazardous material and hazardous waste storage areas.</li> </ul>
<p><b>3-7.</b> Facilities should coordinate with the local fire department concerning the types of hazardous chemicals used at the facility, the areas where they are used, what they are used for, and the quantities which are used in a given operation (MP).</p>	<p>Determine if the facility has coordinated efforts with the local fire department.</p> <p>Determine if the department is aware of areas that are at high risk for chemical incidents.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>3-8.</b> Specific persons should be designated responsible for hazardous materials storage areas, and the precise nature of their responsibilities should be specified (MP).</p> <p><b>3-9.</b> Facilities are required to have on file an MSDS for each hazardous chemical stored and used at the facility (29 CFR 1910.1200(b)(3)(ii), 1910.1200(b)(4)(ii), 1910.1200(b)(6), 1910.1200(g)(1) and 1910.1200(g)(8)).</p>	<p>Verify that specific individuals have been designated responsible for hazardous materials storage areas.</p> <p>Verify that the individuals designated responsible for hazardous materials storage areas are aware of the precise nature of their responsibilities.</p> <p>Verify that an MSDS is on file and readily accessible to workers on all shifts in the workplace for each hazardous material stored or used.</p> <p>(NOTE: These requirements do not apply to:</p> <ul style="list-style-type: none"> <li>- hazardous waste</li> <li>- tobacco or tobacco products</li> <li>- wood or wood products</li> <li>- articles which are defined as a manufactured item other than a fluid or particle which under normal conditions of use does not release more than very small amounts of a hazardous chemical and does not pose a physical hazard or health risk to personnel and that: <ul style="list-style-type: none"> <li>- is formed to a specific shape or design during manufacture</li> <li>- has end use functions dependent in whole or in part upon its shape or design during end use</li> </ul> </li> <li>- food or alcoholic beverages which are sold, used, or prepared in a retail establishment and foods intended for consumption by personnel</li> <li>- any drug as that term is defined in the <i>Federal Food, Drug, and Cosmetic Act</i> when it is in its solid, final form for direct administration</li> <li>- cosmetics which are packaged for sale or intended for personal use</li> <li>- any consumer product or hazardous substance as defined in the <i>Consumer Product Safety Act</i> and the <i>Federal Hazardous Substances Act</i> where the facility can demonstrate that it is used in the workplace in the same manner as normal consumer use, and which use results in a duration and frequency of exposure which is not greater than exposure experienced by consumers</li> <li>- ionizing and nonionizing radiation</li> <li>- biological hazards.)</li> </ul> <p>(NOTE: This requirement also applies to work operations where employees only handle chemicals in sealed containers which are not opened under normal conditions of use.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>3-10.</b> Containers of hazardous chemicals in the workplace are required to be labeled, tagged, or marked with specific information (29 CFR 1910.1200(b)(3)(i), 1910.1200 (b)(4)(i), 1910.1200(b)(5), and 1910.1200(f)(5) through 1910.1200(f)(7)).</p>	<p>Verify that all containers of hazardous chemicals in the workplace are labeled with the following information:</p> <ul style="list-style-type: none"> <li>- identity of the hazardous chemical (same as on MSDS)</li> <li>- appropriate hazard warnings.</li> </ul> <p>(NOTE: The facility may use signs, placards, process sheets, batch tickets, operating procedures, or other written materials instead of attaching labels to individual stationary process containers as long as the alternate method identifies the containers to which it is applicable.)</p> <p>(NOTE: Portable containers into which hazardous chemicals are transferred from labeled containers and which are intended only for the immediate use of the employee who performs the transfer are not required to be marked.)</p> <p>(NOTE: This requirement also applies to work operations where employees only handle chemicals in sealed containers which are not opened under normal conditions.)</p> <p>(NOTE: These requirements do not apply to:</p> <ul style="list-style-type: none"> <li>- hazardous waste</li> <li>- tobacco or tobacco products</li> <li>- wood or wood products</li> <li>- articles which are defined as a manufactured item other than a fluid or particle which, under normal conditions of use, does not release more than very small amounts of a hazardous chemical and does not pose a physical hazard or health risk to personnel and that: <ul style="list-style-type: none"> <li>- is formed to a specific shape or design during manufacture</li> <li>- has end use functions dependent in whole or in part upon its shape or design during end use</li> </ul> </li> <li>- food or alcoholic beverages which are sold, used, or prepared in a retail establishment and foods intended for consumption by personnel</li> <li>- any drug as that term is defined in the <i>Federal Food, Drug, and Cosmetic Act</i> when it is in its solid, final form for direct administration</li> <li>- cosmetics which are packaged for sale or intended for personal use</li> <li>- any consumer product or hazardous substance as defined in the <i>Consumer Product Safety Act</i> and the <i>Federal Hazardous Substances Act</i> where the facility can demonstrate that it is used in the workplace in the same manner as normal consumer use, and which use results in a duration and frequency of exposure which is not greater than exposure experienced by consumers</li> <li>- ionizing and nonionizing radiation</li> <li>- biological hazards.)</li> </ul>

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Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:  
July 1995**

**3-11.** Specific house-keeping requirements must be met in areas where hazardous materials are stored (29 CFR 1910.176(c)).

Verify that areas where hazardous materials are stored and/or used around the facility are free from accumulations of materials that create a hazard from tripping, fire, explosion, or pest harborage.

(NOTE: The following are suggested housekeeping practices:

- drums/containers are not leaking and are tightly sealed
- drip pans and/or absorbent material are placed under containers
- dispensing areas are located away from catch basins and storm drains.)





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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>PERSONNEL TRAINING</b></p> <p><b>3-12.</b> Facilities are required to have a written hazard communication program that is designed to provide all employees with information about the hazardous chemicals to which they are exposed (29 CFR 1910.1200 (b)(1) and 1910.1200 (e)(1)).</p>	<p>Verify that there is a written hazard communication program that contains the following:</p> <ul style="list-style-type: none"> <li>- how general training will be done to inform employees of issues such as MSDSs and hazardous material labels and other warning signs</li> <li>- a list of the hazardous chemicals known to be present (can be done for the entire workplace or individual work areas)</li> <li>- the methods the facility will use to inform the employees of the hazards associated with nonroutine tasks and the hazards associated with chemicals contained in unlabeled pipes in their work areas: <ul style="list-style-type: none"> <li>- identity of the hazardous chemicals contained</li> <li>- appropriate hazard warning</li> </ul> </li> <li>- details of employee training.</li> </ul> <p>Verify that, if the facility is operated such that employees from more than one employer may be exposed (for example, employees of a construction contractor working onsite), the hazard communication program also addresses what the facility will do to:</p> <ul style="list-style-type: none"> <li>- provide the other employees onsite with access to MSDSs for each hazardous chemical the other employer's employees may be exposed to while working</li> <li>- inform the other employers of the labeling system used in the workplace</li> <li>- inform the other employers of any precautionary measures that need to be taken to protect employees during the workplace's normal operating conditions and in foreseeable emergencies.</li> </ul> <p>(NOTE: This requirement also applies to work operations where employees only handle chemicals in sealed containers which are not opened under normal conditions.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>3-12. (continued)</b></p>	<p>(NOTE: These requirements do not apply to:</p> <ul style="list-style-type: none"> <li>- hazardous waste</li> <li>- tobacco or tobacco products</li> <li>- wood or wood products</li> <li>- articles which are defined as a manufactured item other than a fluid or particle which under normal conditions of use does not release more than very small amounts of a hazardous chemical and does not pose a physical hazard or health risk to personnel and that: <ul style="list-style-type: none"> <li>- is formed to a specific shape or design during manufacture</li> <li>- has end use functions dependent in whole or in part upon its shape or design during end use</li> </ul> </li> <li>- food or alcoholic beverages which are sold, used, or prepared in a retail establishment and foods intended for consumption by personnel</li> <li>- any drug as that term is defined in the <i>Federal Food, Drug, and Cosmetic Act</i> when it is in its solid, final form for direct administration</li> <li>- cosmetics which are packaged for sale or intended for personal use</li> <li>- any consumer product or hazardous substance as defined in the <i>Consumer Product Safety Act</i> and the <i>Federal Hazardous Substances Act</i> where the facility can demonstrate that it is used in the workplace in the same manner as normal consumer use, and which use results in a duration and frequency of exposure which is not greater than exposure experienced by consumers</li> <li>- ionizing and nonionizing radiation</li> <li>- biological hazards.)</li> </ul>
<p><b>3-13.</b> Personnel working with hazardous materials are required to be trained in their proper use and potential hazards (29 CFR 1910.1200(b)(3)(iii), 1910.1200(b)(4)(iii), 1910.1200(b)(6), and 1910.1200(h)).</p>	<p>Verify that employees are provided with information and trained on hazardous chemicals in their workplace at the time of initial assignment and whenever a new hazard is introduced into the workplace.</p> <p>Verify that employees are informed of the following:</p> <ul style="list-style-type: none"> <li>- any operations in their work areas where hazardous chemicals are present</li> <li>- the location and availability of the written hazard communication program, including the required lists of hazardous chemicals, and material safety data sheets.</li> </ul> <p>Verify that training includes:</p> <ul style="list-style-type: none"> <li>- methods and observations to use to detect a release</li> <li>- the physical and health hazards of the chemicals in the work areas</li> <li>- protective measures and procedures to use</li> <li>- the details of the hazard communication program developed by the facility, including an explanation of the labeling system, MSDSs, and how employees can obtain and use the appropriate hazard information.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
3-13. (continued)	<p>(NOTE: These requirements do not apply to:</p> <ul style="list-style-type: none"> <li>- hazardous waste</li> <li>- tobacco or tobacco products</li> <li>- wood or wood products</li> <li>- articles which are defined as a manufactured item other than a fluid or particle which, under normal conditions of use, does not release more than very small amounts of a hazardous chemical and does not pose a physical hazard or health risk to personnel and that: <ul style="list-style-type: none"> <li>- is formed to a specific shape or design during manufacture</li> <li>- has end use functions dependent in whole or in part upon its shape or design during end use</li> </ul> </li> <li>- food or alcoholic beverages which are sold, used, or prepared in a retail establishment and foods intended for consumption by personnel</li> <li>- any drug as that term is defined in the <i>Federal Food, Drug, and Cosmetic Act</i> when it is in its solid, final form for direct administration</li> <li>- cosmetics which are packaged for sale or intended for personal use</li> <li>- any consumer product or hazardous substance as defined in the <i>Consumer Product Safety Act</i> and the <i>Federal Hazardous Substances Act</i> where the facility can demonstrate that it is used in the workplace in the same manner as normal consumer use, and which use results in a duration and frequency of exposure which is not greater than exposure experienced by consumers</li> <li>- ionizing and nonionizing radiation</li> <li>- biological hazards.)</li> </ul> <p>(NOTE: These requirements also apply, as necessary, for protection in event of a spill or leak, to work operations where employees only handle chemicals in sealed containers which are not opened under normal conditions of use.)</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>POLLUTION PREVENTION</b></p> <p><b>3-14.</b> Facilities are required to prepare Pollution Prevention Plans by 31 December 1995 (MP).</p> <p><b>3-15.</b> It is Service policy that, where practicable, will use waste source reduction and waste recycling to minimize production of pollutants (560 FW 2.2).</p>	<p>Verify that the facility is in the process of preparing a Pollution Prevention Plan that outlines what the facility is going to do to minimize pollution.</p> <p>(NOTE: This MP is based on guidelines in EO 12856, Section 3-302(d).)</p> <p>Verify that the facility has a plan to recycle, reuse material, and substitute less hazardous products to greatest extent possible.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>HAZARDOUS MATERIALS IN LABORATORIES</b></p> <p><b>3-16.</b> Facilities engaged in the laboratory use of hazardous chemicals (see definitions) are required to have a Chemical Hygiene Plan (29 CFR 1910.1450(e)).</p>	<p>(NOTE: The requirements for hazardous materials in laboratories do not apply to:</p> <ul style="list-style-type: none"> <li>- uses of hazardous chemicals that do not meet the definition of laboratory use</li> <li>- laboratory uses of hazardous chemicals which provide no potential for exposure such as: <ul style="list-style-type: none"> <li>- commercially prepared kits such as pregnancy tests in which all the reagents needed to conduct the test are contained in the kit</li> <li>- procedures using chemically-impregnated test media such as Dip-and Read tests.)</li> </ul> </li> </ul> <p>Verify that a written Chemical Hygiene plan exists and is:</p> <ul style="list-style-type: none"> <li>- capable of protecting employees from health hazards associated with hazardous chemicals in the laboratory.</li> <li>- capable of keeping exposure to regulated substances below required limits.</li> </ul> <p>Verify that the plan is readily available to employees and employee representatives.</p> <p>Verify that the plan includes the following elements and indicates specific measures to be taken when laboratory work involves the use of hazardous chemicals:</p> <ul style="list-style-type: none"> <li>- standard operating procedures relevant to safety and health considerations to be followed</li> <li>- criteria that will be used to determine and implement control measures to reduce employee exposure to hazardous chemicals including the engineering controls, the use of personal protective equipment and hygiene practices</li> <li>- a requirement that fume hoods and other protective equipment are functioning properly and specific measures taken to ensure proper and adequate performance of the equipment</li> <li>- provisions for employee information and training</li> <li>- circumstances and situations which require prior approval from a designated individual</li> <li>- provisions for medical consultations and medical exams</li> <li>- designation of individuals responsible for the implementation of the plan</li> <li>- assignment of a Chemical Hygiene Officer and, if appropriate, establishment of a Chemical Hygiene Committee</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<b>3-16. (continued)</b>	<ul style="list-style-type: none"> <li>- provisions for additional employee protection when working with particularly hazardous substances, including, select carcinogens, reproductive toxins and substances which have a high degree of acute toxicity. Provisions might include:               <ul style="list-style-type: none"> <li>- establishment of a designated area</li> <li>- use of containment devices such as fume hoods or glove boxes</li> <li>- procedures for safe removal of contaminated waste</li> <li>- decontamination procedures.</li> </ul> </li> </ul> <p>Verify that the plan is reviewed annually and updated as needed.</p>
<p><b>3-17.</b> Facilities engaged in the laboratory use of hazardous chemicals (see definitions) are required to provide employees with information and training concerning the hazards of the chemicals in their work areas (29 CFR 1910.1450(f)).</p>	<p>Verify that information about the hazards of the chemicals in the work area is provided at the time of initial employment and prior to assignment involving new exposure risks.</p> <p>(NOTE: The frequency of refresher training is to be determined by the facility.)</p> <p>Verify that employees are informed of:</p> <ul style="list-style-type: none"> <li>- the requirements to be trained and informed</li> <li>- the location and availability of the Chemical Hygiene Plan</li> <li>- the permissible exposure limits for OSHA regulated substances or recommended exposure levels for other hazardous chemicals where there is no OSHA limit</li> <li>- signs and symptoms associated with exposure</li> <li>- the location and known availability of known reference material such as MSDSs.</li> </ul> <p>Verify that training includes:</p> <ul style="list-style-type: none"> <li>- methods and observations that may be used to detect the presence of or release of a hazardous chemical</li> <li>- the physical and health hazards of chemicals in the work area</li> <li>- the measures employees can take to protect themselves</li> <li>- applicable details of the Chemical Hygiene Plan.</li> </ul>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>3-18.</b> Facilities engaged in the laboratory use of hazardous chemicals (see definitions) are required to follow specific handling and operating procedures (29 CFR 1910.1450(h)).</p>	<p>Verify that labels on incoming containers of hazardous chemicals are not removed or defaced.</p> <p>Verify that MSDSs are maintained and readily accessible to lab employees.</p> <p>Verify that, if the facility is developing chemical substances, a determination is made as to whether or not it is a hazardous chemical if the composition of the chemical is known and the chemical is produced only for use by the laboratory.</p> <p>Verify that, if the facility is developing chemical substances as a byproduct and the composition is not known, it is assumed to be hazardous.</p> <p>Verify that, if the chemical substance is produced for another user outside of the lab, the lab meets the standards outlined in 29 CFR 1910.1200 (checklist items 3-9, 3-10, 3-12, and 3-13).</p>
<p><b>3-19.</b> Facilities engaged in the laboratory use of hazardous chemicals (see definitions) are required to maintain specific records (29 CFR 1910.1450(j)).</p>	<p>Verify that records of monitoring for employee exposure are maintained along with any medical records or test results.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>RELEASES</b></p> <p><b>3-20.</b> Absorbent materials should be available for spill and/or release cleanup in areas where hazardous materials are used or stored (MP).</p> <p><b>3-21.</b> Releases in excess or equal to RQs of hazardous substances shall be reported to the NRC immediately (40 CFR 302.1 through 302.6).</p> <p><b>3-22.</b> Releases of an RQ or greater should be reported to the Region and the SPCO (MP).</p>	<p>Verify that absorbent materials are available for spill cleanup.</p> <p>Verify that spills in excess of the RQs listed in Appendix 3-1 have been reported.</p> <p>Verify that a procedure is in place for the notification of the NRC immediately after becoming aware of the release.</p> <p>Verify that, if mixtures or solutions of hazardous substances are released, except for radionuclides, it is reported when:</p> <ul style="list-style-type: none"> <li>- the quantity of all hazardous constituents of the mixture or solution is known and an RQ or more of any hazardous constituent is released</li> <li>- the quantity of one or more of the hazardous constituents of the mixture or solution is unknown and the total amount of the mixture or solution released equals or exceeds the RQ for the hazardous constituent with the lowest RQ.</li> </ul> <p>(NOTE: Notification requirements for radionuclide releases are not included in this protocol.)</p> <p>Verify that releases of an RQ or greater are reported to the Region and the SPCO.</p>

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<p><b>3-23.</b> Facilities with releases that are continuous and stable in quantity and rate are required to meet limited notification requirements (40 CFR 302.8).</p>	<p>Determine if the facility has any releases that are continuous and stable in quantity and rate.</p> <p>Verify that the following notifications have been given:</p> <ul style="list-style-type: none"> <li>- initial telephone notification</li> <li>- initial written notification within 30 days of the initial telephone notification</li> <li>- followup notification within 30 days of the first anniversary date of the initial written notification</li> <li>- notification of changes in: <ul style="list-style-type: none"> <li>- the composition or source of the release</li> <li>- information submitted in the initial written notification</li> <li>- the followup notification required on the first anniversary date of the initial written notification when there is an increase in the quantity of the hazardous substances being released in any 24 h period that represents a statistically significant increase.</li> </ul> </li> </ul> <p>(NOTE: Instead of the initial written report or followup report, the facility may submit a copy of the Toxic Release Inventory form submitted under EPCRA for the previous 1 July provided that conditions are met as described in 40 CFR 302.8(j).)</p>
<p><b>3-24.</b> Facilities where any hazardous chemical is used or stored at which there is a release of an RQ of any extremely hazardous substance in amounts equal to or greater than the threshold limits (see Appendix 3-1) are required to provide emergency release notification (EO 12856, 40 CFR 355.40 and 355 Appendix A).</p>	<p>Determine if the facility has any of the items listed in Appendix 3-1 as extremely hazardous substances in amounts equal to or greater than those listed in Appendix 3-1.</p> <p>Determine if there has been a spill of an extremely hazardous substance in an amount exceeding the RQ.</p> <p>Verify that if a spill has occurred in excess of the RQ, the facility immediately notified the:</p> <ul style="list-style-type: none"> <li>- community emergency coordinator for the local emergency planning committee of any area likely to be affected by the release</li> <li>- state emergency response commission of any state likely to be affected by the release</li> <li>- local emergency response personnel if there is no local emergency planning committee.</li> </ul>

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3-24. (continued)	<p>Verify that the notice contains the following, to the extent known at the time of notice, and so long as no delay in notice or emergency response results:</p> <ul style="list-style-type: none"> <li>- the chemical name or identity of any substance involved in the release</li> <li>- an indication of whether the substance is an extremely hazardous substance</li> <li>- an estimate of the quantity of any such substance that was released into the environment</li> <li>- the time and duration of the release</li> <li>- the medium or media into which the release occurred</li> <li>- any known or anticipated acute or chronic health risks associated with the emergency, and, where appropriate, advice regarding medical attention necessary for exposed individuals</li> <li>- proper precautions to take as a result of the release, including evacuation (unless such information is readily available to the community emergency coordination because of the local emergency plan)</li> <li>- the names and telephone numbers of the person or persons to be contacted for further information.</li> </ul> <p>Verify that, after the immediate verbal notification, a followup written emergency notification is produced which contains the same information detailed in the verbal notice plus:</p> <ul style="list-style-type: none"> <li>- actions taken to respond to and contain the release</li> <li>- any known or anticipated acute or chronic health risks associated with the risk</li> <li>- advice regarding medical attention necessary for exposed individuals as necessary.</li> </ul> <p>(NOTE: These release notification requirements do not apply to the following:</p> <ul style="list-style-type: none"> <li>- any release which results in exposure to persons solely within the boundary of the facility</li> <li>- any release which is a Federally permitted release as defined in CERCLA</li> <li>- any release that is continuous and stable in quantity and rate</li> <li>- any release of a pesticide product exempt from CERCLA reporting</li> <li>- any release not meeting the definition of a release</li> <li>- any radionuclide release which occurs: <ul style="list-style-type: none"> <li>- naturally in the soil from land holdings such as parks, golf courses, or other large tracts of land</li> <li>- naturally from the disturbance of the land for purposes other than mining, such as for agricultural or construction activities</li> <li>- from the dumping of coal and coal ash at utility and industrial facilities with coal-fired boilers</li> <li>- from coal and coal ash piles at utility and industrial facilities with coal-fired boilers.)</li> </ul> </li> </ul>



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<p><b>EMERGENCY PLANNING</b></p> <p>3-25. Facilities where there are extremely hazardous substances present in amounts equal to or greater than the threshold limits found in Appendix 3-1 are required to follow specific emergency planning procedures (EO 12856; 40 CFR 355.30, and 355 Appendix A).</p>	<p>Determine if the facility has any of the items listed in Appendix 3-1 as extremely hazardous substances in amounts equal to or greater than those listed in Appendix 3-1.</p> <p>Verify that the facility has notified the state emergency response commission, or Governor if there is not emergency response commission, that the facility is subject to emergency planning requirements within 60 days after the facility first becomes subject to these requirements.</p> <p>Determine whether the facility has representatives for contact by internal and external parties.</p> <p>Verify that the facility has notified the local emergency planning committee, or Governor if there is no committee, of the facility representative on or before 3 March 1994.</p> <p>Verify that the facility is actively participating in offsite planning by interviewing the facility point-of-contact and reviewing the files.</p> <p>Verify that a procedure is in place to notify the local emergency planning committee of changes at the facility that are relevant to emergency planning.</p>





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<p><b>RIGHT-TO-KNOW</b></p> <p><b>3-26.</b> Facilities which are required to prepare or have available an MSDS for a hazardous chemical under OSHA are required to meet specific MSDS reporting requirements for planning purposes (EO 12856; 40 CFR 370.20, 370.21, and 370.28).</p>	<p>Verify that MSDSs (or listings as appropriate) are submitted to the emergency response commission and the fire department with jurisdictions over the facility for each hazardous chemical present at the facility according to the following thresholds by 3 August 1994:</p> <ul style="list-style-type: none"> <li>- for all hazardous chemicals present at the facility at any one time in amounts equal to or greater than 10,000 lb (4540 kg) (not all hazardous chemicals requiring an MSDS are listed in Appendix 3-1)</li> <li>- for all extremely hazardous substances present at the facility in amounts greater than or equal to 500 lb (227 kg) or the threshold planning quantity (see Appendix 3-1).</li> </ul> <p>(NOTE: Commonly overlooked substances requiring an MSDS are propane and petroleum-based fuels. For diesel and unleaded gasoline 10,000 lb [4540 kg] equals approximately 1379 gal [[5226 L] using the weight of 7.25 lb/gal [3.26 kg/L]. At hatcheries, a commonly used extremely hazardous substance is formaldehyde, a constituent of formalin. If the formalin is 37 percent formaldehyde, 500/0.37 equals 1351 lb of formalin that has to be present to meet the required reporting threshold.</p> <p>(NOTE: Only the substances exceeding the thresholds have to be reported - not all substances at the facility.)</p> <p>(NOTE: The emergency commission consists of the State Emergency Response Commission and the local Emergency Planning Commission. Some states only have 1 commission.)</p> <p>Verify that, if the facility has not submitted MSDSs, the following has been submitted:</p> <ul style="list-style-type: none"> <li>- a list of hazardous chemicals for which the MSDS is required, grouped by hazard category</li> <li>- the chemical or common name of each hazardous chemical</li> <li>- any hazardous component of each hazardous chemical except when reporting mixture.</li> </ul> <p>Verify that revised MSDSs are provided within 3 mo after the discovery of significant new information concerning the hazardous chemical.</p> <p>(NOTE: The facility may fulfill these reporting requirements for a hazardous chemical that is a mixture of hazardous chemicals by doing one of the following:</p> <ul style="list-style-type: none"> <li>- providing the required information on each component in the mixture which is a hazardous chemical</li> <li>- providing the required information on the mixture itself.)</li> </ul>

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<p><b>3-27.</b> Facilities which are required to prepare or have available an MSDSs for a hazardous chemical under OSHA are required to meet specific inventory reporting requirements for planning purposes (EO 12856; 40 CFR 370.20, 370.25, and 370.28).</p>	<p>Verify that the Tier I (or Tier II) forms, "The Hazardous Chemical Inventory" forms, are submitted to the emergency response commission and the fire department with jurisdictions over the facility for each hazardous chemical present at the facility according to the following thresholds by 1 March 1995 and annually thereafter:</p> <ul style="list-style-type: none"> <li>- for all hazardous chemicals present at the facility at any one time in amounts equal to or greater than 10,000 lb (4540 kg) (not all hazardous chemicals requiring an MSDS are listed in Appendix 3-1)</li> <li>- for all extremely hazardous substances present at the facility in amounts greater than or equal to 500 lb (227 kg) or the threshold planning quantity (see Appendix 3-1).</li> </ul> <p>(NOTE: Commonly overlooked substances requiring an MSDS are propane and petroleum-based fuels.)</p> <p>(NOTE: The facility may fulfill these reporting requirements for a hazardous chemical that is a mixture of hazardous chemicals by doing one of the following:</p> <ul style="list-style-type: none"> <li>- providing the required information on each component in the mixture which is a hazardous chemical</li> <li>- providing the required information on the mixture itself.)</li> </ul>
<p><b>3-28.</b> As of 1 July 1995, facilities that manufacture, process, or otherwise use a toxic chemical (see Appendix 3-1) in excess of applicable threshold quantities and that have 10 or more employees are subject to certain reporting and recordkeeping requirements (EO 12856; 40 CFR 372.22 through 372.30).</p>	<p>Determine if facilities meeting the listed criteria exceed the following threshold levels:</p> <ul style="list-style-type: none"> <li>- has manufactured or processed 25,000 lb/yr [11,337.31 kg/yr] of toxic chemicals</li> <li>- has used 10,000 lb [4540 kg] of toxic chemicals in other ways during the year.</li> </ul> <p>(NOTE: Articles containing toxic chemicals are not included in calculations of total toxic chemical present at the facility. See 40 CFR 372.30(b)(3) for procedure to determine whether an excess has occurred.)</p> <p>Verify that the facility annually submits a completed USEPA Form R, "Toxic Chemical Release Form" for each toxic chemical exceeding threshold levels in a calendar year to the USEPA and state on or before 1 July of the next year.</p> <p>Verify that facilities retain the following records for 3 yr:</p> <ul style="list-style-type: none"> <li>- a copy of each report submitted</li> <li>- all supporting materials and documentation used to make the compliance determination.</li> </ul>

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<p><b>FLAMMABLE/ COMBUSTIBLE LIQUIDS STORAGE</b></p> <p><b>General</b></p> <p><b>3-29.</b> Specific MPs should be considered when storing and handling flammable/combustible materials (MP).</p>	<p>(NOTE: The requirements pertaining to the handling, storage, and use of flammable/combustible liquids with a flashpoint below 200 °F [93.33 °C] outlined through 29 CFR 1910.106 (checklist items 3-30 through 3-45) do not apply to the following (29 CFR 1910.106(j)):</p> <ul style="list-style-type: none"> <li>- bulk transportation of flammable/combustible liquids</li> <li>- storage, handling, and use of fuel oil tanks and containers connected with oil burning equipment</li> <li>- storage of flammable and combustible liquids on farms</li> <li>- liquids without a flashpoint that may be flammable under some conditions, such as halogenated hydrocarbons and mixtures containing halogenated hydrocarbons</li> <li>- mists, sprays, or foams, except in flammable aerosols</li> <li>- the following facilities when they meet NFPA Standards: <ul style="list-style-type: none"> <li>- drycleaning plants</li> <li>- manufacture of organic coatings</li> <li>- solvent extraction plants</li> <li>- stationary combustion engines and gas turbines.)</li> </ul> </li> </ul> <p>Verify that the following MPs are followed:</p> <ul style="list-style-type: none"> <li>- there are no positive sources of ignition (open flames, welding, radial heat, mechanical sparks) in the immediate area</li> <li>- items are not stored against pipes or coils producing heat</li> <li>- paint drums that are stored horizontally are rolled a half turn every 90 days</li> <li>- containers of paint are palletized prior to storage</li> <li>- incompatible materials are not stored together (see Appendix 3-5)</li> <li>- aerosol containers are stored in well-ventilated areas.</li> </ul> <p>Verify that containers are stored and handled such that:</p> <ul style="list-style-type: none"> <li>- open flame devices are not in use in the storage area</li> <li>- combustible materials, other than wood pallets used in the storage of flammable/combustibles, are not stored in the storage facility</li> <li>- handling is done so as to avoid damaging the label</li> <li>- materials received without a date of manufacture label are marked with the shipping document date</li> <li>- leaking containers are removed from the storage are immediately</li> <li>- containers are stored so that they are issued or used in the order of dates of manufacture, with the material being the oldest used first</li> <li>- there are no open containers.</li> </ul>

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<p><b>3-30.</b> Drums and other containers of less than 60 gal [227.12 L] individual capacity and portable tanks less than 660 gal [2498.37 L] individual capacity used to store flammable or combustible materials are required to meet specific standards (29 CFR 1910.106(d)(1) and 1910.106(d)(2)).</p>	<p>Verify that flammable and combustible liquid containers meet the constraints outlined in Appendix 3-2 except that glass or plastic containers of no more than 1 gal [3.79 L] capacity may be used for a Class IA or IB flammable liquid if:</p> <ul style="list-style-type: none"> <li>- the liquid would be rendered unfit for its intended use by contact with metal or would excessively corrode a metal container</li> <li>- the user's process either would require more than 1 pt [0.47 L] of a Class IA liquid or more than 1 qt [0.95 L] of a Class IB liquid of a single assay lot to be used at one time, or would require the maintenance of an analytical standard liquid of a quality which is not met by the specified standards of the liquids available, and the quantity of the analytical standard liquid required to be used in any one control process exceeds one-sixteenth the capacity of the container allowed under Appendix 3-2 for the class of liquid.</li> </ul> <p>Verify that each portable tank has one or more devices installed in the top with sufficient emergency venting capacity to limit internal pressure under fire exposure conditions to 10 psig or 30 percent of the bursting pressure of the tank, whichever is greater.</p> <p>(NOTE: These standards do not apply to:</p> <ul style="list-style-type: none"> <li>- storage of containers in service stations</li> <li>- Class I or Class II liquids in the fuel tanks of a motor vehicles, aircraft, boat, or portable or stationary engine</li> <li>- flammable or combustible paints, oils, varnishes, or similar mixtures used for painting or maintenance when not kept for a period in excess of 30 days</li> <li>- beverages when packaged in individual containers not greater than 1 gal [3.79 L].)</li> </ul>
<p><b>3-31.</b> Flammable or combustible liquids shall not be stored in ways that limit the use of exits, stairways, or areas normally used for the safe egress of people (29 CFR 1910.106 (d)(5)(i)).</p>	<p>Verify that exits or common traffic routes are not blocked.</p> <p>(NOTE: These standards do not apply to:</p> <ul style="list-style-type: none"> <li>- storage of containers in service stations</li> <li>- Class I or Class II liquids in the fuel tanks of a motor vehicles, aircraft, boat, or portable or stationary engine</li> <li>- flammable or combustible paints, oils, varnishes, or similar mixtures used for painting or maintenance when not kept for a period in excess of 30 days</li> <li>- beverages when packaged in individual containers not greater than 1 gal [3.79 L].)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p>3-32. Storage cabinets used for the storage of flammable/combustible liquids must meet specific requirements (29 CFR 1910.106(d)(3)).</p>	<p>Verify that storage cabinets meet the following:</p> <ul style="list-style-type: none"> <li>- no more than 60 gal [227.12 L] of Class I or Class II liquids nor any more than 120 gal [454.23 L] of Class III liquids are stored in the cabinet</li> <li>- the cabinets are fire-resistant</li> <li>- cabinets are conspicuously labeled <b>FLAMMABLE--KEEP FIRE AWAY.</b></li> </ul> <p>Verify that metal cabinets are constructed as follows:</p> <ul style="list-style-type: none"> <li>- the bottom, top, door, and sides are at least number 18 gage sheet iron and double walled with 1.5 in. [3.81 cm] air space</li> <li>- joints are riveted, welded, or made tight by an equally effective means</li> <li>- the door has a three point lock</li> <li>- the door sill is raised at least 2 in. [5.08 cm] above the bottom of the cabinet.</li> </ul> <p>Verify that wooden cabinets are constructed as follows:</p> <ul style="list-style-type: none"> <li>- the bottoms, sides, and top are an approved grade of plywood at least 1 in. [2.54 cm] thick which will not break down or delaminate under fire conditions</li> <li>- all joints are rabbeted and fastened in two directions with flathead wood-screws</li> <li>- there is a rabbeted overlap of at least 1 in. [2.54 cm] if more than one door is used</li> <li>- hinges are mounted so that they will not lose their holding capacity due to loosening or burning out of the screws when subjected to the fire test.</li> </ul>
<p>3-33. Storage cabinets used for the storage of flammable/combustible liquids should meet specific requirements (MP).</p>	<p>Verify that storage cabinets meet the following:</p> <ul style="list-style-type: none"> <li>- materials within the cabinet are segregated</li> <li>- there are no open containers within the cabinet</li> <li>- all containers in the cabinet are labeled.</li> </ul>

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<p><b>3-34.</b> Inside flammable/combustible storage rooms must meet certain specifications (29 CFR 1910.106(d)(4)).</p>	<p>Verify that the facility's flammable/combustible storage facility meets the following:</p> <ul style="list-style-type: none"> <li>- the walls meet fire resistance test NFPA 251-1969</li> <li>- a 4 in. [10.16 cm] raised sill or ramp is provided to adjacent rooms or buildings, or the floor of the storage area is 4 in. [10.16 cm] lower than the surrounding floors</li> <li>- wooden shelving is at least 1 in. [2.5 cm] thick</li> <li>- an open grated trench that drains to a safe area is in the building if a sill or ramp is not present</li> <li>- liquid tight wall/ floor joints exist</li> <li>- self-closing fire doors exist (NFPA 80)</li> <li>- the electrical wiring and equipment meet NFPA 70 requirements</li> <li>- the storage in the rooms meet the requirements in Appendix 3-3</li> <li>- there is either gravity or mechanical exhaust ventilation systems</li> <li>- the exhaust system provides for six changes of air in the room per hour</li> <li>- mechanical exhaust systems are controlled by a switch</li> <li>- for gravity ventilation, the fresh air intake and exhaust outlet are on exterior walls</li> <li>- there is one clear aisle at least 3 ft [0.91 m] wide</li> <li>- containers over 30 gal [113.56 L] capacity are not stacked one upon the other</li> <li>- dispensing is done by an approved pump or self-closing faucet.</li> </ul>
<p><b>3-35.</b> The storage of flammable or combustible liquids in warehouses or storage buildings shall meet specific requirements (29 CFR 1910.106(d)(5)(vi)).</p>	<p>Verify that the following requirements are met:</p> <ul style="list-style-type: none"> <li>- if the storage facility is located 50 ft [15.24 m] or less from a building or line of adjoining property that may be built upon, the exposing wall is a blank wall having a fire-resistance rating of at least 2 h</li> <li>- any quantity of liquids may be stored as long as the storage arrangements outlined in Appendix 3-4 are met</li> <li>- containers are separated by pallets or dunnage when necessary to provide stability and prevent excess stress on container walls</li> <li>- portable tanks which are stored over one tier high are designed to nest securely</li> <li>- no pile is closer than 3 ft [0.91 m] to the nearest beam, chord, girder, or other obstruction</li> <li>- piles are 3 ft [0.91 m] below sprinkler deflectors or discharge points of water spray</li> <li>- all wood shelving is at least 1 in. [2.54 cm] thick</li> <li>- aisles are at least 3-ft [0.91-m] wide when necessary for access to doors, windows, or standpipe connections.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>3-36.</b> Flammable/combustible materials stored outside of buildings must meet certain storage and handling criteria (29 CFR 1910.106(d)(6)).</p>	<p>Verify that outdoor flammable/combustible storage meets the following:</p> <ul style="list-style-type: none"> <li>- no more than 1100 gal [4163.95 L] of flammable/combustible liquids is stored adjacent to buildings located on the same premises unless 10 ft [3.05 m] or more exists between buildings and the nearest flammable container</li> <li>- the storage area is graded to divert spills or is surrounded by a curb at least 6-in. [15.24-cm] high</li> <li>- when curbs are used there is a provision for draining of accumulated water and the drains terminate in a safe location which are accessible to operate during fire conditions</li> <li>- the storage area is protected against tampering and kept free of waste and other combustible materials</li> <li>- total quantity and arrangement of liquids outside a building complies with the requirements in Appendix 3-4.</li> </ul> <p>(NOTE: These standards do not apply to:</p> <ul style="list-style-type: none"> <li>- storage of containers in service stations</li> <li>- Class I or Class II liquids in the fuel tanks of a motor vehicles, aircraft, boat, or portable or stationary engines</li> <li>- flammable or combustible paints, oils, varnishes, or similar mixtures used for painting or maintenance when not kept for a period in excess of 30 days</li> <li>- beverages when packaged in individual containers not greater than 1 gal.)</li> </ul>
<p><b>3-37.</b> Areas where flammable/combustibles are stored must meet certain fire protection standards (29 CFR 1910.106(d)(7)).</p>	<p>Verify that all flammable/combustible storage locations meet the following:</p> <ul style="list-style-type: none"> <li>- there is a suitable fire control device at locations where flammable or combustible materials are stored</li> <li>- there is at least one 12-B rated portable fire extinguisher located outside and within 10 ft [3.05 m] of a door opening into any room for storage</li> <li>- there is at least one 12-B rated portable fire extinguisher located within 10 to 25 ft [3.05 to 7.62 m] of any Class I or Class II liquid storage area outside of a storage room, but inside a building</li> <li>- fire extinguishing sprinklers or systems meet the standards in 29 CFR 1910.159</li> <li>- no smoking or open flame is permitted within 50 ft [15.24 m] and signs are posted</li> <li>- no water reactive materials are stored in the same room with flammable/combustible liquids.</li> </ul>

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**3-37. (continued)**

(NOTE: These standards do not apply to:

- storage of containers in service stations, Class I or Class II liquids in the fuel tanks of a motor vehicles, aircraft, boat, or portable or stationary engines
- flammable or combustible paints, oils, varnishes, or similar mixtures used for painting or maintenance when not kept for a period in excess of 30 days.)



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<p><b>FLAMMABLE/ COMBUSTIBLE LIQUIDS STORAGE</b></p> <p><b>Industrial Areas</b></p> <p>3-38. Areas where flammable/combustible materials are stored, dispensed, or used in industrial plants shall meet specific guidelines (29 CFR 1910.106 (e)(4) through 1910.106(e)(9)).</p>	<p>(NOTE: Checklist items 3-38 through 3-40 pertain to industrial areas where the use of flammable or combustible liquid is incidental to the principal business or where flammable or combustible liquids are handled or used only in unit physical operations such as drying, evaporating, filtering, distillation, and similar operations which do not involve chemical reactions.)</p> <p>Verify that the following provisions are met:</p> <ul style="list-style-type: none"> <li>- portable fire extinguishers and fire control equipment shall be in place in quantity and type as needed for the hazards of operation and storage at the site</li> <li>- water is available in a volume and adequate pressure to supply fire protection systems as needed depending on the hazards of the operation, dispensing, and storage</li> <li>- when indicated by special hazards of operation, flammable or combustible liquids processing equipment, major piping, or supporting steel is protected by a water spray system, deluge system, approved fire resistant coatings, insulation, or a combination of these</li> <li>- adequate precautions shall be taken to prevent sources of ignition at the site</li> <li>- Class I liquids shall not be dispensed into containers unless nozzles and containers are electrically interconnected</li> <li>- operations such as welding and cutting for repairs to equipment shall be done under the supervision of an individual in responsible charge</li> <li>- maintenance and operating practices shall control leakage and prevent the accidental escape of flammable or combustible liquids: <ul style="list-style-type: none"> <li>- adequate aisles shall be maintained</li> <li>- combustible waste material and residues shall be kept to a minimum, stored in covered metal containers, and disposed of daily</li> <li>- the grounds area around the buildings and unit operating areas shall be kept free of weeds, trash, or other unnecessary combustibles</li> </ul> </li> <li>- tank vehicle and tank car loading or unloading facilities are separated from aboveground tanks, warehouses, and other plant buildings or nearest line of adjoining property by a distance of 25 ft [7.62 m] for Class I liquids and 15 ft [4.57 m] for Class II and III liquids.</li> </ul> <p>Verify that plant fire facilities are maintained and periodically inspected and tested to ensure they are in satisfactory working condition.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>3-39.</b> Incidental storage of flammable/combustible liquids in industrial areas must conform to certain requirements (29 CFR 1910.106(e)(2)).</p>	<p>Verify that flammable and combustible liquids are stored in closed containers.</p> <p>Verify that the storage areas meet the requirements outlined in 29 CFR 1910.106(d)(3) through 1910.106(d)(4) as listed in checklist items 3-32 and 3-34 except that:</p> <ul style="list-style-type: none"> <li>- the quantity of liquid that can be located outside of an inside storage room or storage cabinet in a building or in any one fire area of a building shall not exceed: <ul style="list-style-type: none"> <li>- 25 gal [94.64 L] of Class IA liquids in containers</li> <li>- 120 gal [454.25 L] of Class IB, IC, II, or III liquids in containers</li> <li>- 660 gal [2498.37 L] of Class IB, IB, II, or III liquids in a single portable tank</li> </ul> </li> <li>- where large quantities of flammable or combustible liquids are needed, storage may be in tanks.</li> </ul> <p>Verify that areas where flammable/combustible liquids are transferred from one container to another container are separated from other operations in the building by an adequate distance or by construction having fire resistance.</p> <p>Verify that drainage or other means is provided to contain spills and adequate natural or mechanical ventilation is present.</p> <p>Verify that the following practices are observed at the point of final use:</p> <ul style="list-style-type: none"> <li>- flammable liquids are kept in covered containers when not actually in use</li> <li>- where flammable/combustible liquids are used or handled means are provided to dispose of promptly and safely spills and leaks</li> <li>- Class I liquids are only used where there are no open flames or other sources of ignition</li> <li>- flammable/combustible liquids are drawn from or transferred into vessels, containers, or portable tanks within a building only through a closed piping system, from safety cans, by means of a device drawing through the top, or from a container or portable tanks, by gravity through an approved self closing valve. Transferring by means of air pressure on the container or portable tanks is prohibited.</li> </ul>

**COMPLIANCE CATEGORY:  
HAZARDOUS MATERIALS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>3-40.</b> Those areas where flammable/ combustible liquids are used in unit operations such as mixing, drying, evaporating, filtering, or distillation are required to meet specific operating standards (29 CFR 1910.106(e)(3)).</p>	<p>Verify that the following parameters are met:</p> <ul style="list-style-type: none"> <li>- these areas are located so that each building or unit of equipment is accessible from at least one side for fire fighting</li> <li>- areas where unstable liquids are handled or small scale unit chemical processes are carried on shall be separated from the remainder of the area by a fire wall of a 2 h minimum fire resistance rating</li> <li>- emergency drainage systems direct leakage and fire protection water to a safe location</li> <li>- emergency drainage systems, if connected to public sewers or discharged into public waterways, are equipped with traps or a separator</li> <li>- when Class I liquids are being used, ventilation is provided at a rate of not less than 1 ft<sup>3</sup>/min/ft<sup>2</sup> of solid floor area through either natural or mechanical means</li> <li>- equipment is designed to limit flammable vapor-air mixtures.</li> </ul>



<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS MATERIALS MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<b>FLAMMABLE COMBUSTIBLE LIQUID STORAGE</b>  <b>Tanks</b>  <b>3-41.</b> Tanks used for the storage of flammable/combustible liquids are required to meet specific design and construction standards (29 CFR 1910.106 (b)(1)).	<p>Verify that tanks are built of steel unless:</p> <ul style="list-style-type: none"> <li>- the tank is installed underground</li> <li>- the properties of the liquid being stored requires materials other than steel be used</li> <li>- the tank is designed according to specifications embodying principles recognized as good engineering design for the materials used</li> <li>- it is an unlined concrete tank that stores flammable or combustible liquids having a gravity of 40 degrees American Petroleum Institute (API) or heavier.</li> </ul> <p>(NOTE: API gravity is a scale adopted by the American Petroleum Institute for measuring the density of oils.)</p> <p>Verify that tanks located above ground or inside buildings are of noncombustible construction.</p> <p>(NOTE: Tanks designed for underground service not exceeding 2500 gal [9463.53 L] capacity may be used above ground and low-pressure tanks and pressure vessels may be used as atmospheric tanks.)</p> <p>Verify that atmospheric tanks are not used for the storage of a flammable or combustible liquid at a temperature at or above its boiling point.</p> <p>Verify that the normal operating pressure of a low pressure tank does not exceed the design pressure of the tank.</p>
<b>3-42.</b> Outside above-ground tanks used for the storage of flammable/combustible liquids are required to be installed according to specific parameters (29 CFR 1910.106(b)(2)(i) through 1910.106 (b)(2)(ii)).	<p>Verify that there is a minimum distance of 3 ft [0.91 m] between any two tanks.</p> <p>Verify that the distance between any two adjacent tanks is not less than one-sixth the sum of their diameters.</p> <p>(NOTE: When the diameter of one tank is less than half the diameter of the adjacent tank, the distance between the two tanks shall not be less than one-half the diameter of the smaller tank.)</p> <p>Verify that, where unstable flammable or combustible liquids are stored, the distance between the tanks is not less than one-half the sum of their diameters.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<b>3-42. (continued)</b>	<p>Verify that, when tanks are compacted in three or more rows or in an irregular pattern, greater spacing or other means is provided for firefighting access.</p> <p>Verify that there is a minimum distance of 20 ft [6.1 m] between a liquefied petroleum gas (LPG) container and a flammable or combustible liquid storage tank.</p> <p>(NOTE: In the case of flammable or combustible liquid tanks operating at pressure exceeding 2.5 psig or equipped with emergency venting which will permit pressures to exceed 2.5 psig spacing of 3 ft [0.91 m] or the use of the formula concerning one-sixth of diameters may be used.)</p> <p>Verify that means such as diversion curbs or grading are provided to prevent the accumulation of flammable or combustible liquids under adjacent LPG containers.</p> <p>Verify that if flammable combustible liquid storage tanks are within a diked area, LPG containers are outside the diked area and at least 10 ft [3.05 m] away from the centerline of the wall of the diked area.</p> <p>(NOTE: The requirement concerning LPG containers and diked areas does not apply if LPG containers of 125 gal [473.18 L] or less capacity are installed adjacent to fuel oil supply of 550 gal [2081.98 L] or less capacity.)</p>
<p><b>3-43.</b> Tanks for the storage of flammable/ combustible liquids are required to meet specific containment requirements (29 CFR 1910.106(b)(2)(viii)).</p>	<p>Verify that the area surrounding a tank or a group of tanks is either provided with drainage or diked as follows:</p> <ul style="list-style-type: none"> <li>- drainage systems terminate in vacant land or other area or in an impounding basin having a capacity not smaller than that of the largest tank served</li> <li>- diked areas have a volumetric capacity of not less than the greatest amount of liquid that can be released from the largest tank within the diked area, assuming a fuel tank.</li> </ul> <p>Verify that walls of diked areas are of earth, concrete, steel, or solid masonry designed to be liquid tight.</p> <p>Verify that earthen walls 3 ft [0.91 m] or more in height have a top that is no less than 2-ft [0.61-m] wide.</p> <p>Verify that the walls of the diked area are restricted to an average height of 6 ft [1.83 m] above interior grade.</p> <p>Verify that there are no loose combustible materials or empty or full drums or barrels within the diked area.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>3-44.</b> In locations where flammable vapors may be present from storage tanks, precautions are required to be taken to prevent ignition (29 CFR 1910.106(b)(6)).</p> <p><b>3-45.</b> Tanks used for the storage of flammable/combustible liquids are required to be strength tested before being placed into service (29 CFR 1910.106 (b)(7)).</p>	<p>Verify that sources of ignition such as open flames, smoking, welding and cutting, hot surfaces, sparks, and radiant heat are avoided.</p> <p>Verify that the tank has been strength tested.</p> <p>(NOTE: It is common for a tank that has been strength tested to be marked with a American Society of Mechanical Engineers (ASME) code stamp, API monogram, or the label of the Underwriters Laboratory.)</p>





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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>COMPRESSED GASES STORAGE</b></p> <p><b>3-46.</b> The in-plant storage, handling, and utilization of all compressed gases in cylinders, portable tanks, rail tankers, or motor vehicles must be done according to the Compressed Gas Association Pamphlet P-1-1 (29 CFR 1910.101).</p>	<p>Verify that the markings on the container are legible and none removed or defaced.</p> <p>Verify that no part of the cylinder has been modified, tampered with, obstructed, removed, or repaired by the user.</p> <p>Verify that the color of the container is not the only means of identifying the contents of the container</p> <p>Verify that containers are not:</p> <ul style="list-style-type: none"> <li>- placed anywhere that they might become part of an electrical current</li> <li>- grounded or used for grounding</li> <li>- exposed to temperature extremes</li> <li>- rolled in the horizontal position or dragged.</li> </ul> <p>Verify that compressed gas storage areas meet the following:</p> <ul style="list-style-type: none"> <li>- they are posted NO SMOKING</li> <li>- there is adequate spacing or segregation by partition so that containers are grouped together by the hazard class of the gas</li> <li>- it is designed so that temperatures will not exceed 125 °F (51.7 °C) cylinders are secured to prevent falling</li> </ul> <p>Verify that storage areas for flammable compressed gases meet the following:</p> <ul style="list-style-type: none"> <li>- acetylene containers are stored valve end up (the container may be stored as much as 45 degrees from the vertical)</li> <li>- portable fire extinguishers are available that are either of the CO<sub>2</sub> type or dry chemical type</li> <li>- the area is well ventilated</li> <li>- heat is by indirect means such as steam or hot water.</li> </ul> <p>Verify that when flammable compressed gases are stored in a separate room without other occupancy:</p> <ul style="list-style-type: none"> <li>- the walls, partitions, and ceiling are continuous from floor to ceiling and securely anchored</li> <li>- at least one wall is an exterior wall</li> <li>- windows in partitions are wired glass in metal frames with a fixed sash</li> <li>- openings to other parts of the building are protected by a self closing fire door with a resistance of at least 1 h.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
3-46. (continued)	<p>Verify that flammable compressed gas cylinders stored inside a building with other occupancy are kept at least 20 ft [6.1 m] from flammable liquids, highly combustible materials, and oxidizers.</p> <p>(NOTE: The most common storage problem is that acetylene (a flammable) and oxygen (an oxidizer) are stored side by side.)</p> <p>(NOTE: Instead of 20 ft [6.1 m], the facility can use a noncombustible barrier at least 5-ft [1.52-m] high having a fire resistance rating of at least 1/2 h.)</p> <p>(NOTE: Flammable compressed gases include the following: acetylene; allene; butadiene; butane; 1-butene; 2-butene; 1-chloro-1, 1-difluoroethane; chlorotrifluoroethylene; chloropropane; deuterium; 1,1-difluoroethane; dimethylether; ethane; ethylacetylene; ethylene; hydrogen; liquid hydrogen; isobutane; isbutylene; liquefied petroleum gas; methane; methyl acetylene; methyl acetylene-propadiene mix (MAPP); methyl chloride; methyl fluoride; methyl vinyl ether; natural gas; propane; propylene; trifluoroethane; vinyl bromide; vinyl chloride; vinyl fluoride.)</p> <p>(NOTE: Oxidizing gases include the following: compressed air, fluorine, nitrous oxide, liquid nitrous oxide, oxygen, liquid oxygen.)</p>
3-47. Compressed gases should be handled according to specific procedures and practices (MP).	<p>Verify that the following practices and procedures are followed:</p> <ul style="list-style-type: none"> <li>- oxygen cylinders are free from grease or oil</li> <li>- numbers or markings that are stamped on the cylinders are not altered or defaced</li> <li>- additional markings are not applied to cylinders without approval</li> <li>- empty cylinders are stored separately but in the same manner as full cylinders</li> <li>- valves on empty cylinders are closed</li> <li>- NO SMOKING signs are posted in and around compressed gas storage sheds.</li> </ul>

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**ACID STORAGE**

3-48. Bulk storage of acids should meet certain storage and handling criteria (MP).

Verify that bulk acid storage sites meet the following:

- buildings are one story in height, preferably of nonflammable construction
- there are permanent louvered openings at floor and ceiling levels or other gravity ventilation method
- there is safety equipment available and operating (eye wash, deluge shower, self-contained breathing apparatus, protective clothing)
- the building is heated to prevent freezing (if applicable)
- different acids are stored in separate spaces or noncombustible sealed barriers at least 3-ft [0.91-m] high between acids
- NO SMOKING signs posted
- automatic sprinkler protection is provided
- workers are provided with protective safety equipment and a copious, flowing supply of fresh, clean water for first aid.



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>TRANSPORTATION</b></p> <p><b>3-49.</b> Shipping papers for hazardous materials are required to indicate the proper shipping name, hazard class, identification number, packing group, and quantities of materials (49 CFR 172.202).</p> <p><b>3-50.</b> Each package or container shall be marked in accordance with specific marking requirements (49 CFR 172.301 and 172.302).</p>	<p>(NOTE: The regulations found in Title 49, Subchapter C of the CFR, detail requirements for the transportation of hazardous materials. 49 CFR 171.1(c) stipulates that these requirements apply when materials are being transported in commerce. According to a representative from the Department of Transportation, commerce is defined in terms of making a profit in this instance, therefore Subchapter C does not apply to Federal agencies when Government personnel are transporting hazardous materials in Government vehicles. But, the regulations do apply when transport is occurring in non-Government vehicles.)</p> <p>Verify that the proper information is displayed on the shipping papers for the hazardous material.</p> <p>Verify that for non-bulk packaging the following markings are on the package:</p> <ul style="list-style-type: none"> <li>- proper shipping name and identification number</li> <li>- technical names</li> <li>- exemption markings</li> <li>- consignee's or consignor's name and address except when the package is: <ul style="list-style-type: none"> <li>- transported by highway only and will not be transferred from one motor vehicle to another</li> <li>- part of a carload lot, truckload lot, or freight container load and the entire contents are shipped from one consignee to one consignor.</li> </ul> </li> </ul> <p>Verify that bulk packaging is marked with identification numbers as follows:</p> <ul style="list-style-type: none"> <li>- on each side and each end if the packaging has a capacity of 3,785 L (1,000 gal) or more</li> <li>- on two opposing sides if the packaging has a capacity of less than 3,785 L (1,000 gal)</li> <li>- on each side and end of the motor vehicles for cylinders permanently installed on a tube trailer motor vehicle.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>3-51.</b> The facility is responsible for providing proper placarding to vehicles transporting hazardous materials off the facility (49 CFR 172.500).</p>	<p>Determine if facility vehicles are used to transport hazardous materials off the facility.</p> <p>Determine if proper DOT placards, as described in 49 CFR 172.504 through 172.558, are affixed to vehicles being used to transport hazardous materials offsite.</p> <p>Determine if transportation has proper DOT placards for vehicles which are being used for transport of hazardous materials.</p> <p>(NOTE: Observe, if practical, the placarding of vehicles used to transport hazardous materials.)</p> <p>(NOTE: See Appendix 3-6 for sample wording of placards.)</p> <p>(NOTE: This requirement does not apply to:</p> <ul style="list-style-type: none"> <li>- infectious substances</li> <li>- hazardous materials classed as ORM-D</li> <li>- hazardous materials authorized to be offered for transportation as limited quantities when identified as such on shipping papers</li> <li>- hazardous materials which are packaged as small quantities</li> <li>- combustible liquids in non-bulk packaging.</li> </ul>
<p><b>3-52.</b> The facility should ensure that transportation of hazardous materials between buildings is accomplished in accordance with MPs to help ensure against spills, releases, and accidents (MP).</p>	<p>Determine if procedures exist to manage movement of hazardous materials throughout the facility.</p> <p>Determine if drivers are trained in spill control procedures.</p> <p>Determine if provisions have been made for securing hazardous materials in vehicles when transporting.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>3-53.</b> A facility that offers for transport, accepts for transport, transfers, or otherwise handles a hazardous material, must have emergency response information available (49 CFR 172.600 through 172.604).</p>	<p>Verify that emergency response information includes:</p> <ul style="list-style-type: none"> <li>- the description of the hazardous material required by 49 CFR 172.202-203</li> <li>- immediate hazards to health</li> <li>- risks of fire or explosion</li> <li>- immediate precautions to take in the event of an accident or incident</li> <li>- immediate methods for handling small or large fires</li> <li>- immediate methods for handling spills or leaks in the absence of fire</li> <li>- preliminary first aid measures.</li> </ul> <p>(NOTE: Shipping papers must contain an emergency response telephone number for the hazardous material being shipped.)</p> <p>Verify that each carrier and facility operator maintains this emergency response information.</p>
<p><b>3-54.</b> Spills, leaks, and other incidents occurring during hazardous material transportation require immediate notification in specific circumstances (49 CFR 171.15).</p>	<p>Verify that immediate notification is done for those incidents in which:</p> <ul style="list-style-type: none"> <li>- as a direct result of hazardous materials: <ul style="list-style-type: none"> <li>- a person is killed</li> <li>- a person is injured and requires hospitalization</li> <li>- estimated carrier or other property damage exceeds \$50,000</li> <li>- an evacuation of the general public occurs lasting 1 or more hours</li> <li>- one or more major transportation arteries or facilities are closed or shut down for 1 or more hours</li> <li>- the operational flight pattern of an aircraft is altered</li> </ul> </li> <li>- fire, breakage, spillage, or suspected radioactive contamination occurs involving shipment of radioactive materials</li> <li>- fire, breakage, spillage, or suspected contamination occurs involving shipment of etiologic agents</li> <li>- the carrier feels the situation merits reporting, even though it does not meet the above requirements</li> <li>- a release of a marine pollutant in excess of 119 gal or 882 lb [451 L or 397 kg].</li> </ul> <p>Verify that the immediate notification is given to the DOT by telephone.</p> <p>(NOTE: If the notice involves etiologic agents, it may be given to the Centers for Disease Control and Prevention (CDC).)</p>

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**3-55.** Written hazardous materials incident reports are required to be submitted to the DOT of each hazardous material incident within 30 days of the incident (49 CFR 171.16).

Verify that detailed hazardous materials incident reports (DHMIR) are submitted to the DOT within 30 days if:

- any of the circumstances of 49 CFR 171.15 are met
- there has been an unintentional release of hazardous materials from a package
- any quantity of hazardous materials has been discharged during transportation.

(NOTE: Guidelines for assistance in completing a DHMIR may be obtained free of charge from the Office of Hazardous Materials Transportation, DHM-51, U.S. Department of Transportation, Washington DC 20590.)

Verify that a copy of the report is retained on site for 2 yr (unless written permission has been obtained from the DOT to maintain records elsewhere).

**3-56.** Facilities are required to train each of its employees involved in the transportation of hazardous materials according to specific requirements (49 CFR 172.704(a), 172.704(b), 172.704(c)(3), 172.704(c)(4), 172.704(e), and 173.1(b)).

(NOTE: Training conducted by facilities to comply with the hazard communication programs required by the Occupational Safety and Health Administration (OSHA) of the Department of Labor (29 CFR 1910.120) or the USEPA (40 CFR 311.1) may be used to satisfy these requirements to the extent that the training addresses the requirements.)

(NOTE: Relevant training received by the employee from a previous employer or other source may be used to satisfy these requirements, provided a current record of the training is obtained from the employee's previous employer.)

Verify that each employee is provided with general awareness/familiarization training designed to do the following:

- provide familiarity with the requirements of 49 CFR 171 through 177
- enable each employee to recognize and identify hazardous materials consistent with the hazard communication standards of 49 CFR 171 through 177.

Verify that each employee is provided with function-specific training concerning those requirements of 49 CFR 171 through 177 that are specifically applicable to the functions the employee performs.

(NOTE: Training related to the requirements of the ICAO Technical Instructions and the IMDG Code may be provided as an alternative to function-specific training on the requirements of 49 CFR 171 through 177 to the extent such training addresses functions authorized by 49 CFR 171.11 and 171.12.)



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>3-57.</b> Facility employees that operate motor vehicles transporting hazardous materials must be appropriately trained (49 CFR 177.816(a) and 177.816(c)).</p>	<p>Verify that each employee is provided with function-specific training concerning exemptions issued under 49 CFR 106, 107, and 110 that are specifically applicable to the functions the employee performs.</p> <p>Verify that each employee is provided with safety training concerning the following:</p> <ul style="list-style-type: none"> <li>- emergency response information</li> <li>- methods and procedures for avoiding accidents, such as the proper procedures for handling packages containing hazardous materials</li> <li>- measures to protect the employee from the hazards associated with hazardous materials to which they may be exposed to in the workplace, including specific measures the employer has implemented to protect employees from exposure.</li> </ul> <p>(NOTE: This requirement does not apply to an employee who repairs, modifies, reconditions, or tests packaging as qualified for use in the transportation of hazardous materials, and who does not perform any other function subject to the requirements of 49 CFR 171 through 177.)</p> <p>(NOTE: This requirement may be met by compliance with the current requirements for a Commercial Driver's License (CDL) with a tank vehicle or hazardous materials endorsement.)</p> <p>Verify that the motor carrier does not transport (or cause to be transported) a hazardous material unless each hazmat employee who will operate a motor vehicle has been trained in the following:</p> <ul style="list-style-type: none"> <li>- the applicable requirements prescribed in 49 CFR 390 through 397</li> <li>- the procedures necessary for the safe operation of that vehicle.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>3-57. (continued)</b></p>	<p>Verify that each driver receives driver training that includes the following subjects:</p> <ul style="list-style-type: none"> <li>- pretrip safety inspection</li> <li>- use of vehicle controls and equipment, including operation of emergency equipment</li> <li>- procedures for maneuvering tunnels, bridges, and railroad crossings</li> <li>- requirements pertaining to attendance of vehicles, parking, smoking, routing, and incident reports</li> <li>- loading and unloading of materials, including load securement, package handling methods, and compatibility and segregation of cargo in a mixed load</li> <li>- operation of the vehicle, including turning, backing, braking, parking, and handling</li> <li>- vehicle characteristics, including those that affect vehicle stability, such as the following: <ul style="list-style-type: none"> <li>- effects of braking and curves</li> <li>- effects of speed on vehicle control</li> <li>- dangers associated with maneuvering through curves</li> <li>- dangers associated with weather or road conditions that a driver may experience</li> <li>- high center of gravity.</li> </ul> </li> </ul>
<p><b>3-58.</b> Facility employees that operate cargo tanks or vehicles with portable tanks having a capacity of 1000 gal [3790 L] or more of hazardous materials must be appropriately trained (49 CFR 177.816(b) through 177.826(d)).</p>	<p>(NOTE: This requirement may be met by compliance with the current requirements for a CDL with a tank vehicle or hazardous materials endorsements.)</p> <p>Verify that each HAZMAT employee who operates a cargo tank or vehicle with a portable tank with a capacity of 1000 gal [3790 L] or more receives training applicable to the requirements of 49 CFR 171 through 177.</p> <p>Verify that each employee has the appropriate state-issued CDL.</p>

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<b>3-58. (continued)</b>	<p>Verify that each employee receives specialized training that includes the following subjects:</p> <ul style="list-style-type: none"> <li>- operation of emergency control features of the cargo tank and portable tank</li> <li>- retest and inspection requirements for cargo tanks</li> <li>- loading and unloading procedures</li> <li>- the properties and hazards of the material transported</li> <li>- special vehicle handling characteristics, including the following:               <ul style="list-style-type: none"> <li>- high center of gravity</li> <li>- fluid load subject to surge</li> <li>- effects of fluid-load surge on braking</li> <li>- characteristic differences in stability among baffled, unbaffled, and multi-compartmented tanks</li> <li>- effects of partial loads on vehicle stability.</li> </ul> </li> </ul>
<b>3-59.</b> Facilities must meet specific requirements regarding training schedules (49 CFR 172.704(c)(1) through 172.704(c)(3)).	<p>Verify that training for an employee hired on or before 2 July 1993 is completed prior to 1 October 1993.</p> <p>Verify that training for an employee employed after 2 July 1993 is completed within 90 days after employment.</p> <p>Verify that an employee who changes hazardous materials job functions completes training in the new job function(s) within 90 days after the change.</p> <p>(NOTE: An employee may perform new hazardous materials job functions prior to the completion of training provided that the employee performs those functions under the supervision of a properly trained and knowledgeable employee.)</p> <p>Verify that the employee receives the required training at least once every 2 yr.</p>
<b>3-60.</b> Facilities are required to maintain training records (49 CFR 172.704(d)).	<p>Verify that a record of current training, inclusive of the preceding 2 yr, is created and retained by the facility for each employee for as long as that employee is employed by the facility as an employee and for 90 days thereafter.</p> <p>Verify that the record includes the following:</p> <ul style="list-style-type: none"> <li>- the employee's name</li> <li>- the most recent training completion date of the employee's training</li> <li>- a description, copy, or the location of the training materials used</li> <li>- the name and address of the person providing the training</li> <li>- certification that the employee has been trained and tested.</li> </ul>



## Appendix 3-1

### Consolidated List of Chemicals Covered in EPCRA

(NOTE: This list is constantly changing and the Federal Register should be consulted for the most up-to-date information.)

This consolidated chemical list includes chemicals subject to reporting requirements under EPCRA. This consolidated chemical list does not contain all chemicals that are subject to reporting requirements in Sections 311 and 312 of SARA Title III. These hazardous chemicals, for which MSDSs must be developed under the *Occupational Safety and Health Act*, Hazard Communication Standards, are identified by broad criteria rather than enumeration. There are over 50,000 such substances that meet the criteria. The consolidated list has been prepared to help determine whether there is a need to submit reports under EPCRA and, for a specific chemical, what reports need to be submitted.

The list includes chemicals under the four following Federal statutory provisions:

1. SARA Section 302 Extremely Hazardous Substances - the presence of which, in sufficient quantities, requires certain emergency planning activities to be conducted. Releases of these substances are also subject to reporting under Section 304 of Title III. The final rule listing the extremely hazardous substances and their threshold planning quantities (TPQ) is found in 40 CFR 355.
2. CERCLA Hazardous Substances (RQ) Chemicals - releases of which are subject to reporting under the CERCLA or Superfund of 1980. Such releases are also subject to reporting under Section 304 of Title III. CERCLA hazardous substances, and their RQs, are listed in 40 CFR 302, Table 302.4.
3. SARA Section 313 Toxic Chemicals - emissions or releases of which must be reported annually as part of SARA Title III's community right-to-know provisions. A list of these toxic chemicals is found in 40 CFR 372.65.
4. RCRA Hazardous Wastes - from the "P" and "U" lists (40 CFR 261.33) of specific chemicals. RCRA hazardous wastes from the "F" and "K" lists are not included here; such waste streams are also CERCLA hazardous substances. This listing is provided as an indicator that you may already have data on a specific chemical that can be used for Title III reporting purposes.

There are four columns in the consolidated list corresponding to these four statutory provisions. If a chemical is listed as an extremely hazardous substance under Section 302, its TPQ is given in the extremely hazardous substance column. Similarly, the CERCLA RQ is given for those chemicals that are listed as hazardous substances. A key to the symbols used in Section 302 and CERCLA columns precedes the list. An "X" in the column for Section 313 indicates that the chemical is subject to reporting under Section 313.

The letter-and-digit code in the column for 40 CFR 261.33 is the chemical's RCRA hazardous waste code. A blank in any of these columns indicates that the chemical is not subject to the corresponding statutory authorities.

The Chemical Abstract Service (CAS) registry number is provided for each chemical on the list.

(continued)

## Appendix 3-1 (continued)

### Key to Symbols in the Consolidated Chemical List

- # Indicates that the RQ is subject to change when an assessment of potential carcinogenicity and/or chronic toxicity is completed; until then, the statutory RQ applies.
- ## Indicates that an adjusted RQ has been proposed, but a final judgment has not been made.
- + USEPA has proposed to adjust the RQ for radionuclides by establishing RQs in units of Curies; until then, the 1 lb RQ applies.
- \* Indicates that the chemical is proposed for deletion from the list of extremely hazardous substances.
- \*\* Indicates that no RQ is assigned to this generic or broad class.

(NOTE: These abbreviations are used below: Haz Sub (hazardous substances), Mat (materials).)

### CONSOLIDATED CHEMICAL LIST

This is an alphabetical listing of the consolidated list of chemicals. Numbered chemicals are listed first.

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
1,Amino-2-methyl-anthraquinone			x		82-28-0
1-Butanamine,N-butyl-N-nitroso-		10	x	U172	924-16-3
1-Bromo-1-(bromomethyl)-1,3-propanedicarbonitrile			x		35691-65-7
1-Chloro-1,1-difluoroethane (HCFC-142(b))			x		75-68-3
1-Chloro-1,1,2,2-tetrafluoroethane (HCFC-124a)			x		354-25-6
1-Methylbutadiene		100		U186	504-60-9
1-Naphthalamine		100	x	U167	134-32-7

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
1-Propanamine		5000		U194	107-10-8
1-Propanol,2,3- dibromo-phos- phate (3:1)		10	x	U235	126-72-7
(1,1'-Biphenyl)- 4,4'diamine, 3,3'dimethoxy-		100	x	U091	119-90-4
(1,1'-Biphenyl)- 4,4'diamine, 3,3'dimethyl-		10	x	U095	119-93-7
1,1-Dichloro-1-fluoro- ethane (HCFC- 141b)			x		1717-80-6
1,1-Dichloro-1,2,2-tri- fluoroethane (HCFC-123b)			x		812-04-4
1,1-Dichloro- 1,2,2,3,3-pentaflu- oropropane (HCFC-225cc)			x		13474-88- 9
1,1-Dichloro- 1,2,3,3,3-pentaflu- oropropane (HCFC-225ab)			x		111512- 56-2
1,1-Dichloroethane		1000		U076	75-34-3
1,1-Dichloroethylene		100	x	U078	75-35-4
1,1,1,2-Tetrachloroet- hane			x		630-20-6
1,1,1,2-Tetrachloro-2- fluoroethane (HCFC-121a)			x		354-11-0
1,1,2,2-Tetrachloro-1- fluoroethane (HCFC 121)			x		354-14-3
1,2-Benzenedicar- boxylic acid,[bis(2- ethylhexyl)]ester		100	x	U028	117-81-7

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
1,2-Benzenedicarboxylic acid, diethyl ester (diethyl phthalate)		1000	x	U088	84-66-2
1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino) ethyl]-		1000		P042	51-43-4
1,2-Benzisothiazolin-3(2H) one, 1,1-dioxide		100	x	U202	81-07-2
1,2-Benzphenanthrene		100		U050	218-01-9
1,2-Butylene oxide			x		106-88-7
1,2-Dibromo-3-chloropropane		1	x	U066	96-12-8
1,2-Dichloro-1,1-difluoroethane (HCFC-132b)			x		1649-08-7
1,2-dichloro-1,1,2,3,3-pentafluoropropane (HCFC-225bb)			x		422-44-6
1,2-Dichloro-1,1,2-trifluoroethane (HCFC-123a)			x		354-23-4
1,2-Dichloro-1,1,3,3,3-pentafluoropropane (HCFC-225da)			x		431-86-7
1,2-Dichloroethane		100	x	U077	107-06-2
1,2-Dichloroethylene			x		540-59-0
1,2-Dichloropropane		1000	x	U083	78-87-5
1,2-Dimethylhydrazine		1		U099	540-73-8
1,2-Diphenylhydrazine		10	x	U109	122-66-7

(continued)



# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
1,2-Oxathiolane,2,2-dioxide		10	x	U193	1120-71-4
1,2-Phenylenedi-amine			x		95-54-5
1,2-Phenylenedi-amine dihydrochloride			x		615-28-1
1,2-trans-Dichloroethylene		1000		U079	156-60-5
1,2,3-Trichloropropane			x		96-18-4
1,3-Benzenediol		5000		U201	108-46-3
1,3-Benzodioxole, 5-propyl		10		U090	94-58-6
1,3-Benzodioxole,5- )1-1 propenyl		100	x	U141	120-58-1
1,3-Benzodioxole, 5- ) 2,propenyl		100	x	U203	94-59-7
1,3-Butadiene			x		106-99-0
1-(3-Chloroallyl)-3,5,7-triaza-1-azoniaadamantane chloride			x		4080-31-3
1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)			x		507-55-1
1,3-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC-225ea)			x		136013-79-1
1,3-Dichloropropylene		100	x	U084	542-75-6
1,3-Isobenzofurandione		5000	x	U190	85-44-9
1,3-Phenylenedi-amine			x		108-45-2

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
1,4-Dichloro-2-butene			x		764-41-0
1,4-Diethylene dioxide (1,4-Dioxane)		100	x	U108	123-91-1
1,4-Naphthalenedione		5000		U166	130-15-4
1,4-Phenylenediamine dihydrochloride			x		624-18-0
2-Acetylaminofluorene		1	x	U005	53-96-3
2-Aminoanthraquinone			x		117-79-3
2-Bromo-2-nitropropane-1,3-diol (Bromopol)			x		52-51-7
2-Butanone peroxide		10		U160	1338-23-4
2-Butanone (Methyl ethyl ketone)		5000	x	U159	78-93-3
2-Butene, 1,4-dichloro-		1		U074	764-41-0
2-Chloro-1,1,1-trifluoroethane (HCFC 133a)			x		75-88-7
2-Chloro-1,1,2,2-tetrafluoroethane (HCFC 124)			x		2837-89-0
2-Chloroacetophenone			x		532-27-4
2-Chloroethyl vinyl ether		1000		U042	110-75-8
2-Chlorophenol		100		U048	95-57-8
2-Cyclohexyl-4,6-dinitrophenol		100		P034	131-89-5
2-Ethoxyethanol		100	x		110-80-5
2-Mercaptobenzothiazole			x		149-30-4

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
2-Furancarboxalde- hyde		5000		U125	98-01-1
2-Methoxyethanol			x		109-86-4
2-Methylactonitrile			x		75-86-5
2-Methylpyridine			x		109-06-8
2-Naphthylamine		10	x	U168	91-59-8
2-Nitropropane		10	x	U171	79-46-9
2-Phenylphenol			x		90-43-7
2-Picoline		5000		U191	109-06-8
2,2-Dibromo-3-nitrilo- propionamide			x		10222-01- 2
2,2-Dichloro-1,1,1-tri- fluoroethane (HCFC-123)			x		306-83-2
2,2-Dichloro- 1,1,1,3,3-pentaflu- oropropane (HCFC-225aa)			x		128903- 21-9
2,2-Dichloropropi- onic acid		5000			75-99-0
2,3-Dichloro- 1,1,1,2,3-pentaflu- oropropane (HCFC-225ba)			x		128903- 21-9
2,3-Dichloropropene		100	x		78-88-6
2,3,4-Trichlorophenol		10	x		15950-66- 0
2,3,5-Trichlorophenol		10			933-78-8
2,3,5-Trimethylphe- nyl methylcarbam- ate			x		2655-15-4
2,3,6-Trichlorophenol		10			933-75-5
2,3,7,8-Tetrachlorod- ibenzo p-dioxin (TCDD)		1			1746-01-6

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
2,4-D 2-ethyhexyl ester			x		1928-43-4
2,4-D 2-ethyl-4-meth- ylpentyl ester			x		53404-37- 8
2,4,-D8			x		94-82-6
2,4-D acid		100	x	U240	94-75-7
2,4,-D Butoxyethyl ester			x		1929-73-3
2,4-D Butyl ester			x		94-80-4
2,4-D chlorocrotyl ester					2971-38-2
2,4-D esters		100	x		94-11-1
2,4-D esters		100			94-79-1
2,4-D esters		100			94-80-4
2,4-D esters		100			1320-18-9
2,4-D esters		100			1928-38-7
2,4-D esters		100			2971-38-2
2,4-D esters		100			53467-11- 1
2,4-D esters		100			1928-61-6
2,4-D esters		100			1929-73-3
2,4-D esters		100			25168-26- 7
2,4-DP			x		120-36-5
2,4-D propylene gly- col butyl ether ester			x		1320-18-9
2,4-D sodium salt			x		2702-72-9
2,4-Diaminoanisole sulfate			x		39156-41- 7
2,4-Diaminosole			x		615-41-7
2,4-Diaminotoluene		10		U221	823-40-5
2,4-Dichlorophenol		100	x	U081	120-83-2

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
2,4-Dimethylphenol		100	x	U101	105-67-9
2,4-Dinitrophenol		10	x	P048	51-28-5
2,4-Dithiobiuret			x		541-53-7
2,4,5-T esters		1000			25168-15-4
2,4,5-T salts		1000			13560-99-1
2,4,5-T amines		5000			1319-72-8
2,4,5-T amines		5000			3813-14-7
2,4,5-T amines		5000			6369-96-6
2,4,5-T amines		5000			6369-97-7
2,4,5-T amines		5000			2008-46-0
2,4,5-T esters		1000			93-79-8
2,4,5-T esters		1000			1928-47-8
2,4,5-T esters		1000			2545-59-7
2,4,5-T esters		1000			61792-07-2
2,4,5-T		1000		U232	93-76-5
2,4,5-TP acid esters		100			32534-95-5
2,5-Furandione		5000	x	U147	108-31-6
2,6-Dichlorophenol		100		U082	87-65-0
2,6-Dimethylphenol			x		576-26-1
2,6-Xylidine			x		87-62-7
3-Chloro-1,1,1-trifluoro-propane (HCFC-253fb)			x		460-35-5
3-Chloro-2-methyl-1-propene			x		563-47-3
3-Chloropropionitrile			x		542-76-7
3-Iodo-2-propynyl butylcarbamate		1##	x	U375	55406-53-6

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
3,3-dichloro- 1,1,1,2,2-pentafluoro- propane (HCFC-25ca)			x		422-56-0
3,3-Dichlorobenzidine			x		91-94-1
3,3-Dichlorobenzidine dihydrochloride			x		612-83-9
3,3-Dichlorobenzidine sulfate			x		64969-34-2
3,3-Dimethoxybenzidine dihydrochloride			x		20325-40-0
3,3-Dimethoxybenzidine hydrochloride			x		111984-09-9
3,3-Dimethoxybenzidine dihydrochloride			x		612-82-8
3,3-Dimethoxybenzidine dihydrofluoride			x		41756-75-0
3,4-Diaminotoluene		10	x	U221	95-80-7
3,4-Dinitrotoluene		10			610-39-9
3,4,5-Trichlorophenol		10			609-19-8
3,5-Dichloro-N-(1,1-dimethyl-2-propynyl) benzamide		5000		U192	23950-58-5
4-Aminoazobenzene			x		60-09-3
4-Aminobiphenyl			x		92-67-1
4-Chloro-m-cresol		5000		U039	59-50-7
4-Chlorophenyl phenyl ether		5000			7005-72-3
4-Nitrobiphenyl			x		92-93-3
4,4'-Diaminodiphenyl ether			x		101-80-4

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
4,4'-Isopropylidene- diphenol			x		80-05-7
4,4'-Methylene bis(N,N-di- methyl) benze- namine			x		101-61-1
4,4'-Methylenedi- aniline			x		101-77-9
4,4'-Thiodianiline 6- dinitrophenol			x		139-65-1
5-Nitro-o-anisidine			x		99-59-2
5-Nitro-o-toluidine			x		99-55-6
Abamectin (Avermec- tin B1)			x		71751-41- 2
Acenaphthene		100			83-32-9
Acenaphthylene		5000			208-96-8
Acephate (Acetylphosphora- midothioic acid O,S-dimethyl ester			x		30560-19- 1
Acetaldehyde		1000	x	U001	75-07-0
Acetaldehyde, trichloro-		5000		U034	75-87-6
Acetamide			x		60-35-5
Acetamide-N-(4- ethoxyphenyl)-		100		U187	62-44-2
Acetamide,N-(ami- nothi-oxomethyl)-		1000		P002	591-08-2
Acetic acid		5000			64-19-7
Acetic acid, ethyl ester		5000		U112	141-78-6
Acetic acid, fluoro, sodium salt	10/10,000	10		P058	62-74-8
Acetic acid, lead(2+) salt		10		U144	301-04-2

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Acetic acid, thal- lium(1+) salt		100		U214	563-68-8
Acetic anhydride		5000			108-24-7
Acetone		5000	x	U002	67-64-1
Acetone cyanohydrin	1000	10		P069	75-86-5
Acetone thiosemicar- bazide	1000/ 10,000				1752-30-3
Acetonitrile		5000	x	U003	75-05-8
Acetophenone		5000	x	U004	98-86-2
Acetyl bromide		5000			506-96-7
Acetyl chloride		5000		U006	75-36-5
Acrifluorfen, sodium salt [5-(Chloro-4- (trifluorome- thyl)phenoxy)-2- nitro-benzoic acid, sodium sal)]			x		62476-59- 9
Acrolein	500	1	x	P003	107-02-8
Acrylamide	1000/ 10,000	5000	x	U007	79-06-1
Acrylic acid		5000	x	U008	79-10-7
Acrylonitrile	10,000	100	x	U009	107-13-1
Acrylyl chloride	100				814-68-6
Adipic acid		5000			124-04-09
Adiponitrile	1000				111-69-3
Alachlor			x		15972-60- 8
Aldicarb	100/ 10,000	1	x	P070	116-06-3
Aldicarb sulfone		1##		P203	1646-88-4
Aldrin	500/ 10,000	1	x	P004	309-00-2

(continued)



# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
d-trans-Allethrin [d-trans-Chrysanthemic acid of d-allethrone]			x		28057-48-9
Allyl alcohol	1000	100	x	P005	107-18-6
Allyl chloride		1000	x		107-05-1
Allylamine	500		x		107-11-9
alpha,alpha-Dimethyl phenethylamine		5000		P046	122-09-8
alpha-Endosulfan		1			959-98-8
alpha-BHC		10			319-84-6
alpha-Hexachlorocyclohexane			x		319-84-6
Aluminum (fume or dust)			x		7429-90-5
Aluminum oxide (fibrous forms)			x		1344-28-1
Aluminum phosphide	500	100	x	P006	20859-73-8
Aluminum sulfate		5000			10043-01-3
Ametryn			x		834-12-8
Aminopterin	500/ 10,000				54-62-6
Amiton	500				78-53-5
Amiton oxalate	100/ 10,000				3734-97-2
Amitraz			x		33689-61-1
Amitrole		10	x	U011	61-82-5
Ammonia	500	100	x		7664-41-7
Ammonium acetate		5000			631-61-8
Ammonium benzoate		5000			1863-63-4

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Ammonium bicarbon- ate		5000			1066-33-7
Ammonium bichro- mate		10			7789-09-5
Ammonium bifluoride		100			1341-49-7
Ammonium bisulfite		5000			10192-30- 0
Ammonium carbam- ate		5000			1111-78-0
Ammonium carbon- ate		5000			506-87-6
Ammonium chloride		5000			12125-02- 9
Ammonium chromate		10			7788-98-9
Ammonium cit- rate,dibasic		5000			3012-65-5
Ammonium fluobo- rate		5000			13826-83- 0
Ammonium fluoride		100			12125-01- 8
Ammonium hydrox- ide		1000			336-21-6
Ammonium nitrate (solution)			x		6484-52-2
Ammonium oxalate		5000			5972-73-6
Ammonium oxalate		5000			6009-70-7
Ammonium oxalate		5000			14258-49- 2
Ammonium picrate		10		P009	131-74-8
Ammonium silicofluo- ride		1000			16919-19- 0
Ammonium sulfa- mate		5000			7773-06-0
Ammonium sulfate (solution)			x		7783-20-2

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Ammonium sulfide		100			12135-76-1
Ammonium sulfite		5000			10196-04-0
Ammonium tartrate		5000			14307-43-8
Ammonium tartrate		5000			3164-29-2
Ammonium thiocyanate		5000			1762-95-4
Ammonium vanadate		1000		P119	7803-55-6
Amphetamine	1000				300-62-9
Amyl acetate		5000			628-63-7
iso-Amyl acetate		5000			123-92-2
sec-Amyl acetate		5000			626-38-0
tert-Amyl acetate		5000			625-16-1
Analine,2,4,6-trimethyl-	500				88-05-1
Anilazine			x		101-05-3
Aniline	1000	5000	x	U012	62-53-3
Anthracene		5000	x		120-12-7
Antimony		5000	x		7440-36-0
Antimony pentachloride		1000			7647-18-9
Antimony pentafluoride	500				7783-70-2
Antimony potassium tartrate		100			28300-74-5
Antimony tribromide		1000			7789-61-9
Antimony trichloride		1000			10025-91-9
Antimony trifluoride		1000			7783-56-4
Antimony trioxide		1000			1309-64-4

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Antimycin A	1000/ 10,000				1397-94-0
Antu	500/ 10,000				86-88-4
Aroclor 1016		1			12674-11- 2
Aroclor 1221		1			11104-28- 2
Aroclor 1232		1			11141-16- 5
Aroclor 1242		1			53469-21- 9
Aroclor 1248		1			12672-29- 6
Aroclor 1254		1			11097-69- 1
Aroclor 1260		1			11096-82- 5
Arsenic		1	x		7440-38-2
Arsenic acid		1		P010	1327-52-2
Arsenic acid		1		P010	7778-39-4
Arsenic disulfide		1			1303-32-8
Arsenic pentoxide	100/ 10,000	1		P011	1303-28-2
Arsenic trisulfide		1			1303-33-9
Arsenic trioxide	100/ 10,000	1		P012	1327-53-3
Arsenous trichloride	500	1			7784-34-1
Arsine	100				7784-42-1
Arsine, diethyl-		1		P038	692-42-2
Asbestos		1	x		1332-21-4
Atrazine			x		1912-24-9
Azaserine		1		U015	115-02-6

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Azinophos-ethyl	100/ 10,000				2642-71-9
Azinophos-methyl	10/10,000				86-50-0
Barban		1##		U280	101-27-9
Barium and com- pounds			x		7440-39-3
Barium cyanide		10		P013	542-62-1
Bendiocarb		1##	x	U278	22781-23- 3
Bendiocarb phenol		1##		U364	22961-82- 6
Benfluralin			x		1861-40-1
Benomyl		1##	x	U271	17804-35- 2
Benzal chloride	500	5000	x	U017	98-87-3
Benzamide			x		55-21-0
Benz[a]anthracene		10		U018	56-55-3
Benzan- thracene,7,12-dim- ethyl-		1		U094	57-97-6
Benz[c]acridine		100		U016	225-51-4
Benzenamine,2- methyl 5-nitro-		100		U181	99-55-8
Benzenamine,2- methyl, hydrochlo- ride		100	x	U222	636-21-5
Benzenamine,3-(trif- luoro-methyl)-	500				98-16-8
Benzenamine-4- chloro		1000		P024	106-47-8
Benzenamine,4- chloro-2-methyl- hydrochloride		100		U049	3165-93-3
Benzenenamine, 4- methyl		100		U353	106-49-0

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Benzenamine,4-nitro-		5000		P077	100-01-6
Benzenamine 4,4'- methylenebis-2- chloro		10	x	U158	101-14-4
Benzenamine,NN- dimethyl-4-pheny- lazo		10	x	U093	60-11-7
Benzene		10	x	U019	71-43-2
Benzene,1-bromo-4- phenoxy-		100		U030	101-55-3
Benzene,1-(chlorom- ethyl)-4-nitro-	500/ 10,000				100-14-1
Benzene,1-methyl- 2,4-dinitro-		10	x	U105	121-14-2
Benzene,1-methyl- ethyl- (Cumene)		5000	x	U055	98-82-8
Benzene,1,2-dichloro		100	x	U070	95-50-1
Benzene,1,2,4,5-tet- rachloro-		5000		U207	95-94-3
Benzene,1,3-dichloro		100	x	U071	541-73-1
Benzene,1,3-diisocy- anatomethyl		100	x	U223	26471-62- 5
Benzene,1,3,5-trini- tro-		10		U234	99-35-4
Benzene,1,4-dichloro		100	x	U072	106-46-7
Benzene,2-methyl- 1,3-dinitro-		100	x	U106	606-20-2
Benzene, chloro-		100	x	U037	108-90-7
Benzene, dimethyl-		1000	x	U239	1330-20-7
Benzene, hexachloro-		10	x	U127	118-74-1
Benzene, hexahy- dro- (cyclohexane)		1000	x	U056	110-82-7
Benzene, m-dime- thyl-		1000	x		108-38-3

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Benzene, methyl- (toulene)		1000	x	U220	108-88-3
Benzene, o-dimethyl-		1000	x		95-47-6
Benzene, p-dimethyl-		1000	x		106-42-3
Benzene, pen- tachloro-		10		U183	608-93-5
Benzene, pentachlo- ronitro-		100	x	U185	82-68-8
Benzeneearsonic acid	10/10,000				98-05-5
Benzenesulfonyl chloride		100		U020	98-09-9
Benzidine		1	x	U021	92-87-5
Benzimidazole,4,5- dichloro-2-(trifluo- romethyl)	500/ 10,000				3615-21-2
Benz[j]acean- thrylene, 1,2-dihy- dro-3-methyl-		10		U157	56-49-5
Benzoic acid		5000			65-85-0
Benzo[a]pyrene		1		U022	50-32-8
Benzo[b]fluoranthene		1			205-99-2
Benzo[ghi]perylene		5000			191-24-2
Benzoic acid		5000			65-85-0
Benzo[jk]fluorene		100		U120	206-44-0
Benzo[k]fluoranthene		5000			207-08-9
Benzonitrile		5000			100-47-0
Benzotrichloride	500	10	x	U023	98-07-7
Benzoyl chloride		1000	x		98-88-4
Benzoyl peroxide			x		94-36-0
Benzyl chloride	500	100	x	P028	100-44-7
Benzyl cyanide	500				140-29-4
Beryllium chloride		1			7787-47-5

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Beryllium fluoride		1			7787-49-7
Beryllium nitrate		1			13597-99-4
Beryllium nitrate		1			7787-55-5
Beryllium powder		10	x	P015	7440-41-7
beta-Endosulfan		1			33213-65-9
beta-BHC		1			319-85-7
beta-Chloronaphthalene		5000		U047	91-58-7
Bicyclo[2.2.1]heptane-2-carbonitrile, 5-chloro-6-(methyl)	500/ 10,000				15271-41-7
Bifenthrin			x		82657-04-3
Biphenyl			x		92-52-4
Bis(2-chloroethoxy) methane		1000	x	U024	111-91-1
Bis(2-chloroisopropyl) ether		1000	x	U027	108-60-1
Bis(2-ethylhexyl)adipate			x		103-23-1
Bis(chloromethyl)ketone	10/10,000				534-07-6
Bis(tributyltin) oxide			x		56-35-9
Bitoscanate	500/ 10,000				4044-65-9
Boron trichloride	500		x		10294-34-5
Boron trifluoride compound with methyl ether (1:1)	1000				353-42-4
Boron trifluoride	500		x		7637-07-2

(continued)



# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Bromadiolone	100/ 10,000				18772-56-7
Bromacil			x		314-40-9
Bromacil, lithium salt			x		53404-19-6
Bromine	500		x		7726-95-6
Bromoacetone		1000		P017	598-31-2
Bromochlorodifluoromethane (Halon 1211)			x		353-59-3
Bromoform		100	x	U225	75-25-2
Bromotrifluoromethane (Halon 1311)			x		75-63-8
Bromoxynil			x		1689-84-5
Bromoxynil octanoate			x		1689-88-2
Brucine		100	x	P018	357-57-3
Butanoic acid, 4-[bis(2-chloroethyl)amino] benzene-		10		U035	305-03-3
Butyl benzyl Phthalate		100			85-68-7
Butyl acetate		5000			123-86-4
iso-Butyl acetate		5000			110-19-0
sec-Butyl acetate		5000			105-46-4
tert-Butyl acetate		5000			540-88-5
sec-Butyl alcohol			x		78-92-2
tert-Butyl alcohol			x		75-65-0
sec-Butylamine		1000			13952-84-6
sec-Butylamine		1000			513-49-5
tert-Butylamine		1000			75-64-9
Butyl acrylate			x		141-32-2

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Butylamine		1000			109-73-9
iso-Butylamine		1000			78-81-9
Butylate		1##		U392	2008-41-5
Butyraldehyde			x		123-72-8
Butyric acid		5000			107-92-6
iso-Butyric acid		5000			79-31-2
CI Acid Green 3			x		4680-78-8
CI Acid Red 114			x		6459-94-5
CI Basic Green 4			x		569-64-2
CI Basic Red 1			x		989-38-8
CI Direct Black 38			x		1937-37-7
CI Direct Blue 6			x		2602-46-2
CI Direct Blue 218			x		28407-37-6
CI Direct Brown 95			x		16071-86-6
CI Disperse Yellow 3			x		2832-40-8
CI Food Red 15			x		81-88-9
CI Food Red 5			x		3761-53-3
CI Solvent Orange 7			x		3118-97-6
CI Solvent Yellow 14			x		824-07-0
CI Solvent Yellow 34 (Auramine)		100	x	U014	492-80-8
CI Solvent Yellow 3			x		97-56-3
CI Vat Yellow 4			x		128-66-5
Cacodylic acid		1		U136	75-60-5
Cadmium		10	x		7440-43-9
Cadmium acetate		10			543-90-8
Cadmium bromide		10			7789-42-6
Cadmium chloride		10			10108-64-2

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Cadmium oxide	100/ 10,000				1306-19-0
Cadmium stearate	1000/ 10,000				2223-93-0
Calcium arsenate	500/ 10,000	1			7778-44-1
Calcium arsenite		1			52740-16-6
Calcium carbide		10			75-20-7
Calcium chromate		10		U032	13765-19-0
Calcium cyanamide			x		156-62-7
Calcium cyanide		10		P021	592-01-8
Calcium dodecylbenzene sulfonate		1000			26264-06-2
Calcium hypochlorite		10			7778-54-3
Cantharidin	100/ 10,000				56-25-7
Captan		10	x		133-06-2
Carbachol chloride	500/ 10,000				51-83-2
Carbamic acid, ethyl ester		100	x	U238	51-79-6
Carbamic acid, methyl-nitroso-,ethyl ester		1		U178	615-53-2
Carbamic acid, methyl-o-(((2,4-dimethyl-1,3 dithiolan-2-yl	100/ 10,000	1##		P185	26419-73-8
Carbamic chloride, dimethyl-		1	x	U097	79-44-7
Carbaryl		100	x		63-25-2
Carbendazim		1##		U372	10605-21-7

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Carbofuran	10/10,000	10	x		1563-66-2
Carbofuran phenol		1##		U367	1563-38-8
Carbon disulfide	10,000	100	x	P022	75-15-0
Carbon oxyfluoride		1000		U033	353-50-4
Carbon tetrachloride		10	x	U211	56-23-5
Carbonyl sulfide			x		463-58-1
Carbophenothion	500				786-19-6
Carbosulfan		1##		P189	55285-14-8
Carboxin			x		5234-68-4
Catechol			x		120-80-9
Chinomethionat			x		2349-01-2
Chloramben			x		133-90-4
Chlordane	1000	1	x	U036	57-74-9
Chlorendic acid			x		115-28-6
Chlorfenvinfos	500				470-90-6
Chlorinuron ethyl			x		90982-32-4
Chlorinated fluorocar- bon(Freon 113)			x		76-13-1
Chlorine	100	10	x		7782-50-5
Chlorine cyanide		10		P033	506-77-4
Chlorine dioxide			x		10049-04-4
Chlormephos	500				24934-91-6
Chlormequat chloride	100/ 10,000				999-81-5
Chlornaphazine		100		U026	494-03-1
Chloroacetaldehyde		1000	P023		107-20-0
Chloroacetic acid	100/ 10,000		x		79-11-8

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Chlorobenzilate		10	x	U038	510-15-6
Chlorodibro- momethane		100			124-48-1
Chlorodifluo- romethane (HCFC- 22)			x		75-45-6
Chloroethane		100	x		75-00-3
Chloroethanol	500				107-07-3
Chloroethyl chloroformate	1000				627-11-2
Chloroform	10,000	10	x	U044	67-66-3
Chloromethyl methyl ether	100	10	x	U046	107-30-2
Chlorophacinone	100/ 10,000				3691-35-8
Chloropicrin			x		76-06-2
Chloroprene			x		126-99-8
Chlorotetrafluoroet- hane			x		63938-10- 3
Chlorothalonil			x		1897-45-6
Chlorotrifluo- romethane (CFC 13)			x		75-72-9
Chloroxuron	500/ 10,000				1982-47-4
Chlorpyrifos		1			2921-88-2
Chlorpyrifos methyl			x		5598-72-3
Chlorsulfonic acid		1000			7790-94-5
Chlorsulfuron			x		64902-72- 3
Chlorthiophos	500				21923-23- 9
Chromic acetate		1000			1066-30-4
Chromic acid		10			11115-74-5

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Chromic acid		10			7738-94-5
Chromic chloride	1/10,000				10025-73-7
Chromic sulfate		1000			10101-53-8
Chromium		5000	x		7440-47-3
Chromous chloride		1000			10049-05-5
Cobalt			x		7440-50-8
Cobalt,((2,2'-1,2-ethanediylbis (ni-trilomethyldyne))bis(6)	100/ 10,000				62207-76-5
Cobalt carbonyl	10/10,000				10210-68-1
Cobaltous bromide		1000			7789-43-7
Cobaltous formate		1000			544-18-3
Cobaltous sulfamate		1000			14017-41-5
Colchicine	10/10,000				64-86-8
Copper		5000	x		7440-50-8
Copper cyanide		10		P029	544-92-3
Copper dimethyldithiocarbamate		1##		U393	137-29-1
Coumaphos	100/ 10,000	10			56-72-4
Coumatetralyl	500/ 10,000				5836-29-3
Cresol(s) (mixed isomers)		1000	x	U052	1319-77-3
Cresol,o-	1000/ 10,000	1000	x	U052	95-48-7
Creosote		1	x	U051	8001-58-9
Crimidine	100/ 10,000				535-89-7

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Crotonaldehyde,(E)-	1000	100		U053	123-73-9
Crotonaldehyde	1000	100	x	U053	4170-30-3
Cumene hydroperox- ide			x		80-15-9
Cupferron			x		135-20-6
Cupric acetate		100			142-71-2
Cupric chloride		10			7447-39-4
Cupric nitrate		100			3251-23-8
Cupric oxalate		100			5893-66-3
Cupric sulfate		10			7758-98-7
Cupric sulfate ammo- niated		100			10380-29- 7
Cupric tartrate		100			815-82-7
Cyanazine			x		21725-46- 2
Cyanides (soluble cyanide salts)		10		P030	57-12-5
Cyanogen		100		P031	460-19-5
Cyanogen bromide	500/ 10,000	1000		U246	506-68-3
Cyanogen iodide	1000/ 10,000				506-78-5
Cyanophos	1000				2636-26-2
Cyanuric fluoride	100				675-14-9
Cycloate		1##	x	U386	1134-23-2
Cyclohexanol			x		108-93-0
Cyclohexanone		5000		U057	108-94-1
Cycloheximide	100/ 10,000				66-81-9
Cyclohexylamine	10,000				108-91-8
Cyclophosphamide		10		U058	50-18-0

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Cyfluthrin			x		68359-37-5
Cyhalothrin			x		68085-85-8
D-Glucopyranose,2-deoxy-2-(3-methyl-3-nitrosoureido)-		1		U206	18883-66-4
Daunomycin		10		U059	20830-81-3
Dazomet		1##	x	U366	533-74-4
Dazomet, sodium salt			x		53404-60-7
DDD		1		U060	72-54-8
DDE		1			72-55-9
DDT		1		U061	50-29-3
Decaborane(14)	500/ 10,000				17702-41-9
Decabromodiphenyl oxide			x		1163-19-5
Delta-BHC		1			319-86-8
Demeton	500				8065-48-3
Demeton-S-methyl	500				919-86-8
Desmmedipham			x		13684-56-5
Di-(2-ethylhexyl)phthalate (DEHP)			x		177-81-7
Di-n-octyl phthalate		5000	x	U107	117-84-0
Di-n-propylnitrosamine(N-Nitrosodi-n-propylamine)		10	x	U111	621-64-7
Dialifor	100/ 10,000				10311-84-9
Diallate		100	x	U062	2303-16-4

(continued)



# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Diaminotoluene (mixed isomers)		10	x	U221	25376-45-8
Diaminotoluene(mixed isomers)		10			496-72-0
Diazinon		1	x		333-41-5
Diazomethane			x		334-88-3
Dibenz(a)lpyrene		10		U064	189-55-9
Dibenz[a,h] anthracene		1		U063	53-70-3
Dibenzofuran			x		132-64-9
Diborane	100				19287-45-7
Dibromotetrafluoroethane (Halon 2402)			x		124-73-2
Dibutyl phthalate		10	x	U069	84-74-2
Dicamba		1000	x		1918-00-9
Dichlone		1			117-80-6
Dichloran			x		99-30-9
Dichloro-1,1,2-trifluoroethane			x		90454-18-5
Dichlorobenzene (mixed isomers)		100	x		25321-22-6
Dichlorobromomethane		5000	x		75-27-4
Dichlorodifluoromethane(CFC-12)		5000	x	U075	75-71-8
Dichloroethyl ether	10,000	10	x	U025	111-44-4
Dichlorofluoromethane (HCFC-21)			x		75-43-4
Dichloromethyl ether	100	10	x	P016	542-88-1

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Dichloromethyl- phenylsilane	1000				149-74-6
Dichloropentafluoropropane			x		127564-92-5
Dichlorophene			x		97-23-4
Dichloropropane		1000			26638-19-7
Dichloropropane-		100			8003-19-8
Dichloropropene		100			26952-23-8
Dichlorotetrafluoroethane (CFC-114)			x		76-14-2
Dichlorotrifluoroethane			x		34077-87-7
Dichlorvos	1000	10	x		62-73-7
Dicholobenil		100			1194-65-6
Dicofol			x		115-32-2
Dicrotophos	100				141-66-2
Dicyclofop methyl			x		51338-27-3
Dicyclopentadiene			x		
Dieldrin		1		P037	60-57-1
Diepoxybutane	500	10	x	U085	1464-53-5
Diethanolamine			x		111-42-2
Diethyl ethyl			x		38727-55-8
Diethyl chlorophosphate	500				814-49-3
Diethyl-p-nitrophenylphosphate		100		P041	311-45-5
Diethyl sulfate			x		64-67-5
Diethylamine		100			109-89-7

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Diethylcarbamazine citrate	100/ 10,000				1642-54-2
Diethylene glycol, dicarbamate		1##		U395	5952-26-1
Diethylstilbestrol		1		U089	56-53-1
Diflubenzuron			x		35367-38- 5
Digitoxin	100/ 10,000				71-63-6
Diglycidyl ether	1000				2238-07-5
Diglycidyl resorcinol ether			x		101-90-6
Digoxin	10/10,000				20830-75- 5
Dihydrosafrole			x		94-58-6
Diisopropylfluoro- phosphate	100	100		P043	55-91-4
Dimefox	500				115-26-4
Dimethipin			x		55290-64- 7
Dimethoate	500/ 10,000	10	x	P044	60-51-5
Dimethyl chlorothio- phosphate			x		2524-03-0
Dimethyl-p-phenyl- enediamine	10/10,000				99-98-9
Dimethyl phosphoro- chloridothioate	500				2524-03-0
Dimethyl phthalate		5000	x	U102	131-11-3
Dimethyl sulfate	500	100	x	U103	77-78-1
Dimethylamine		1000	x	U092	124-40-3
Dimethylamine dicamba			x		2330-66-5
Dimethyldichlorosi- lane	500		x		75-78-5

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Dimethylhydrazine	1000	10	x	U098	57-14-7
Dimetilan	500/ 10,000	1##		P191	644-64-4
Dinitrobenzene (mixed)		100			25154-54- 5
Dinitrophenol		10			25550-58- 7
Dinitrotoulene	10/10,000	10	x	P047	534-52-1
Dinitrotoluene (mixed isomers)		10	x		25321-14- 6
Dinocap			x		39300-45- 3
Dinoseb	100/ 10,000	1000	x	P020	88-85-7
Dinoterb	500/ 10,000				1420-07-1
Dioxathion	500				78-34-2
Diphacinone	10/10,000				82-66-6
Diphenamid			x		957-51-7
Diphenylamine			x		122-39-4
Diphosphoramide, octamethyl-	100	100		P085	152-16-9
Dipotassium enfothal			x		2164-07-0
Dipropyl isocinchom- eronate			x		136-45-8
Dipropylamine		5000		U110	142-84-7
Diquat		1000			85-00-7
Diquat		1000			2764-72-9
Disodium cyan- odithioimidocar- bonate			x		138-93-2
Disulfiram		1##		U403	97-77-8
Disulfoton	500	1		P039	298-04-4

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Dithiazinine iodide	500/ 10,000				514-73-8
Dithiobiuret	100/ 10,000	100		P049	541-53-7
Diuron		100	x		330-54-1
Dodecylbenzene- sulfonic acid		1000			27176-87- 0
Dodine			x		2439-10-3
Emetine, dihydrochloride	1/10,000				316-42-7
Endosulfan	10/10,000	1		P050	115-29-7
Endosulfan sulfate		1			1031-07-8
Endothall		1000		P088	145-73-3
Endothion	500/ 10,000				2778-04-3
Endrin	500/ 10,000	1		P051	72-20-8
Endrin aldehyde		1			7421-93-4
Epichlorohydrin	1000	100	x	U041	106-89-8
EPN	100/ 10,000				2104-64-5
Ergocalciferol	1000/ 10,000				50-14-6
Ergotamine tartrate	500/ 10,000				379-79-3
Ethanamine, N-ethyl- N-nitroso-		1	x	U174	55-18-5
Ethanimidothioci acid		1##		U394	30558-43- 1
Ethane, 1,1'-oxybis-		100		U117	60-29-7
Ethane, 1,2-dibromo-		1	x	U067	106-93-4
Ethane, 1,1,2-trichloro		100	x	U227	79-00-5
Ethane, 1,1,1,2-tetra- chloro-		100		U208	630-20-6

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Ethane, 1,1,2,2-tetra- chloro-		100	x	U209	79-34-5
Ethane, hexachloro		100	x	U131	67-72-1
Ethanesulfonyl chlo- ride, 2-chloro-	500				1622-32-8
Ethanethioamide		10	x	U218	62-55-5
Ethanol, 1,2-dichloro- acetate	1000				10140-87- 1
Ethanol, 2,2'-(nitroso imino) bis-		1		U173	1116-54-7
Ethene, tetrachloro		100	x	U210	127-18-4
Ethene, chloro-		1	x	U043	75-01-4
Ethion	1000	10			563-12-2
Ethoprophos	1000		x		13194-48- 4
Ethyl acrylate		1000	x	U113	140-88-5
Ethyl chloroformate			x		541-41-3
Ethyl dipropylthiocar- bamate (EPTC)		1##	x	U390	759-94-4
Ethyl methacrylate		1000		U118	97-63-2
Ethyl methane- sulfonate		1		U119	62-50-0
Ethyl Ziram		1##		U407	14324-55- 1
Ethylbenzene		1000	x		100-41-4
Ethylbis(2-chloroet- hyl)amine	500				538-07-8
Ethylene			x		74-85-1
Ethylene glycol			x		107-21-1
Ethylene oxide	1000	10	x	U115	75-21-8
Ethylene thiourea		10	x	U116	96-45-7

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Ethylenebisdithiocarbamic- acid, salts & esters/		5000		U114	111-54-6
Ethylenediamine	10,000	5000			107-15-3
Ethylenediamine tetra-acetic acid (EDTA)		5000			60-00-4
Ethyleneimine	500	1	x	P054	151-56-4
Ethylenethiocyanate	10,000				542-90-5
Ethylidene dichloride			x		75-34-3
Famphur		1000	x	P097	52-85-7
Fenamiphos	10/10,000				22224-92-6
Fenarimol			x		60100-88-9
Fenbutatin oxide			x		13356-08-6
Fenitrothion	500				122-14-5
Fenoxaprop ethyl			x		66441-23-4
Fenoxycarb			x		72490-01-8
Fenpropathrin			x		39515-41-8
Fensulfothion	500				115-90-2
Fenthion					55-38-9
Fenvalerate			x		51630-58-1
Ferbam		1##	x	U396	14484--64-1
Ferric ammonium citrate		1000			1185-57-5
Ferric ammonium oxalate		1000			2944-67-4

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Ferric ammonium oxalate		1000			55488-87-4
Ferric chloride		1000			7705-08-0
Ferric fluoride		100			7783-50-8
Ferric nitrate		1000			10421-48-4
Ferric sulfate		1000			10028-22-5
Ferrous ammonium sulfate		1000			10045-89-3
Ferrous chloride		100			7758-94-3
Ferrous sulfate		1000			7720-78-7
Ferrous sulfate		1000			7782-63-0
Florouracil	500/ 10,000				51-21-8
Fuazifop-butyl			x		69806-50-4
Fluometuron	100/ 10,000		x		2164-17-2
Fluorene		5000			86-73-7
Fluorine	500	10	x	P056	7782-41-4
Fluoroacetamide	100/ 10,000	100		P057	640-19-7
Fluoroacetic acid	10/10,000				144-49-0
Fluoroacetyl chloride	10				359-06-8
Fluorouracil			x		51-21-8
Fluvalinate			x		69409-94-5
Folpet			x		133-07-3
Fomesafen			x		72178-02-0
Fonofos	500				944-22-9

(continued)



# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Formaldehyde	500	100	x	U122	50-00-0
Formaldehyde cyanohydrin	1000				107-16-4
Formetanate hydro- chloride	500/ 10,000	1##		P198	23422-53- 9
Formic acid		5000	x	U123	64-18-6
Formothion	100				2540-82-1
Formparanate	100/ 10,000	1##		P197	17702-57- 7
Fosthietan	500				21548-32- 3
Fuberidazole	100/ 10,000				3878-19-1
Fulminic acid, mercury(II) salt		10		P065	628-86-4
Fumaric acid		5000			110-17-8
Furan	500	100		U124	110-00-9
Furan, tetrahydro-		1000		U213	109-99-9
Gallium trichloride	500/ 10,000				13450-90- 3
Glycidylaldehyde		10		U126	765-33-4
Guanidine,N-nitroso- N methyl-N'-nitro		10		U163	70-25-7
Heptachlor		1	x	P059	76-44-8
Heptachlor epoxide		1			1024-57-3
Hexachloro-1,3-buta- diene		1	x	U128	87-68-3
Hexachlorocyclopent- adiene	100	10	x	U130	77-47-4
Hexachloronaphtha- lene			x		1335-87-1
Hexachlorophene		100	x	U132	70-30-4
Hexachloropropene		1000		U234	1888-71-7

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Hexaethyl tetraphos- phate		100		P062	757-58-4
Hexamethylenedi- amine, N,N'-dibu- tyl-	500				4835-11-4
Hexamethylphos- phoramide			x		680-31-9
n-Hexane			x		110-54-3
Hexazinone			x		51235-04- 2
Hydramethylnon			x		67485-29- 4
Hydrazine	1000	1	x	U133	302-01-2
Hydrazine sulfate			x		10034-93- 2
Hydrogen chloride (gas only)	500	5000	x		7647-01-0
Hydrocyanic acid	100	10	x	P063	74-90-8
Hydrogen fluoride	100	100	x	U134	7664-39-3
Hydrogen peroxide (conc > 52%)	1000				7722-84-1
Hydrogen selenide	10				7783-07-5
Hydrogen sulfide	500	100		U135	7783-06-4
Hydroquinone	500/ 10,000		x		123-31-9
Imazalil			x		35554-44- 0
Indeno(1,2,3- cd)pyrene		100		U137	193-39-5
Iron, pentacarbonyl-	100		x		13463-40- 06
Isobenzan	100/ 10,000				297-78-9
Isobutyl alcohol		5000		U140	78-83-1
Isobutyraldehyde			x		78-84-2

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Isobutyronitrile	1000				78-82-0
Isocyanic acid,3,4- dichlorophenyl ester	500/ 10,000				102-36-3
Isodrin	100/ 10,000	1	x	P060	465-73-6
Isafenphos			x		25311-71- 1
Isophorone		5000			78-59-1
Isophorone diisocy- anate	100				4098-71-9
Isoprene		100			78-79-5
Isopropanolamine dode-cyclbenzene sulfonate		1000			42504-46- 1
Isopropyl alcohol (mfg- strong acid processes)			x		67-63-0
Isopropyl chloroform- ate	1000				108-23-6
Isopropylmethylpyra- zoly dimethylcar- bamate	500	1##		P192	119-38-0
Kepone		1		U142	143-50-0
Lactofen			x		77501-63- 4
Lactonitrile	1000				78-97-7
Lasiocarpine		10		U143	303-34-4
Lead		10	x		7439-92-1
Lead arsenate		1			10102-48- 4
Lead arsenate		1			7645-25-2
Lead arsenate		1			7784-40-9
Lead chloride		10			7758-95-4

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Lead fluoborate		10			13814-96-5
Lead fluoride		10			7783-46-2
Lead iodide		10			10101-63-0
Lead nitrate		10			10099-74-8
Lead phosphate		10		U145	7446-27-7
Lead stearate		10			1072-35-1
Lead stearate		10			52652-59-2
Lead stearate		10			7428-48-0
Lead stearate		10			56189-09-4
Lead subacetate		10		U146	1335-32-6
Lead sulfate		10			15739-80-7
Lead sulfate		10			7446-14-2
Lead sulfide		10			1314-87-0
Lead thiocyanate		10			592-87-0
Leptophos	500/ 10,000				21609-90-5
Lewisite	10				541-25-3
Lindane	1000/ 10,000	1	x	U129	58-89-9
Linuron			x		330-55-2
Lithium carbonate			x		554-13-2
Lithium chromate		10			14307-35-8
Lithium hydride	100				7580-67-8
m-Cresol		1000	x	U052	108-39-4
m-Nitrophenol		100			554-84-7
m-Nitrotoluene		1000			99-08-1

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Malathion		100	x		121-75-5
Maleic acid		5000			110-16-7
Maleic, hydrazide		5000		U148	123-33-1
Malononitrile	500/ 10,000	1000	x	U149	109-77-3
Maneb			x		12427-38- 2
Manganese			x		7439-96-5
Manganese dimeth- yldithiocarbamate		1##		P196	15339-36- 3
Manganese, tricarbo- nyl methylcyclo- pentadienyl	100				12108-13- 3
Mechlorethamine	10		x		51-75-2
Mecoprop			x		93-65-2
Melphalan		1		U150	148-82-3
Mephosfolan	500				950-10-7
Mercuric acetate	500/ 10,000				1600-27-7
Mercuric chloride	500/ 10,000				7487-94-7
Mercuric cyanide		1			592-04-1
Mercuric nitrate		10			10045-94- 0
Mercuric oxide	500/ 10,000				21908-53- 2
Mercuric sulfate		10			7783-35-9
Mercuric thiocyanate		10			592-85-8
Mercurous nitrate		10			7782-86-7
Mercurous nitrate		10			10415-75- 5
Mercury		1	x	U151	7439-97-6
Merphos			x		150-50-5

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Methacrolein diacetate	1000				10476-95-6
Methacrylic anhydride	500				760-93-0
Methacryloyl chloride	100				920-46-7
Methacryloyloxyethyl isocyanate	100				30674-80-7
Methacrylonitrile	500	1000	x	U152	126-98-7
Metham sodium		1##	x	U384	137-42-8
Methamidophos	100/ 10,000				10265-92-6
Methane, chloro		100	x	U045	74-87-3
Methane, dibromo-		1000	x	U068	74-95-3
Methane, dichloro-		1000	x	U080	75-09-2
Methane, iodide-		100	x	U138	74-88-4
Methane, trichlorofluoro- (CFC-11)		5000		U121	75-69-4
Methanesulfanyl chloride, trichloro	500	100	x	P118	594-42-3
Methanesulfonyl fluoride	1000				558-25-8
Methanol		5000	x	U154	67-56-1
Methapyrilene		5000		U155	91-80-5
Methazole			x		20354-26-1
Methidathion	500/ 10,000				950-37-8
Methiocarb	500/ 10,000	10	x		2032-65-7
Methomyl	500/ 10,000	100		P066	16752-77-5
Methoxone			x		94-74-6
Methoxone sodium salt			x		3653-48-3

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Methoxychlor		1	x		72-43-5
Methoxyethylmercuri- acetate	500/ 10,000				151-38-2
Methyl 2-chloroacry- late	500				80-63-7
Methyl acrylate			x		96-33-3
Methyl bromide	1000	1000	x	U029	74-83-9
Methyl chlorocarbon- ate			x		79-22-1
Methyl chloroformate(Methylchloro- carbonate)	500	1000		U156	79-22-1
Methyl chloroform		1000	x	U226	71-55-6
Methyl hydrazine		10	x	P068	60-34-4
Methyl isobutyl ketone		5000	x	U161	108-10-1
Methyl isocyanate	500	10	x	P064	624-83-9
Methyl isothiocyanate	500		x		556-61-1
Methyl mercaptan	500	100		U153	74-93-1
Methyl methacrylate		1000	x	U162	80-62-6
Methyl parathion			x		298-00-0
Methyl phenkapton	500				3735-23-7
Methyl phosphonic dichloride	100				676-97-1
N-Methyl-2-pyrroli- done			x		873-50-4
Methyl tert-butyl ether			x		1634-04-4
Methyl thiocyanate	10,000				556-64-9
Methyl vinyl ketone	10				78-94-4
Methylene-bis-(phe- nyliso-cyan- ate)(MBI)			x		101-68-8

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Methylmercuric dicy- anamide	500/ 10,000				502-39-6
N-Methylolacryla- mide			x		924-42-5
Methylthiouracil		10		U164	56-04-2
Methyltrichlorosilane	500		x		75-79-6
Metiram			x		9006-42-2
Metolcarb	100/ 10,000	1##		P190	1129-41-5
Metribuzin			x		21087-64- 5
Mevinphos	500	10	x		7786-34-7
Mexacarbate	500/ 10,000	1000			315-18-4
Michler's ketone			x		90-94-8
Molinate		1##	x	U365	2212-67-1
Mitomycin C	500/ 10,000	10		U010	50-07-7
Molybdenum trioxide			x		1313-27-5
Moncrotophos	10/10,000				6923-22-4
(Mono)chloropenta- fluoroethane (CFC 115)			x		76-15-3
Monoethylamine		100			75-04-7
Monomethylamine		100			74-89-5
Monuron			x		150-68-5
Muscimol	500/ 10,000	1000		P007	2763-96-4
Mustard gas	500		x		505-60-2
Myclobutanil			x		88671-89- 0
n-Butyl alcohol			x		71-36-3

(continued)



# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
N,N'-Diethylhydrazine		10		U086	1615-80-1
N,N'-Dimethylaniline			x		121-69-7
N,N'-Dimethylformamide			x		68-12-2
N-Nitroso-N-ethylurea		1	x		759-73-9
N-Nitroso-N-methylurea		1	x		684-93-5
N-Nitrosodiphenylamine		100	x		86-30-6
N-Nitrosomethylvinylamine		10	x		4549-40-0
N-Nitrosomorpholine			x		59-89-2
N-Nitrosornicotine			x		16543-55-8
N-Nitrosopiperidine		10	x	U179	100-75-4
N-Nitrosopyrrolidine		1		U180	930-55-2
Nabam			x		142-59-6
Naled		10	x		300-76-5
Naphthalene		100	x	U165	91-20-3
Naphthenic acid		100			1338-24-5
Nickel		100	x		7440-02-0
Nickel ammonium sulfate		100			15699-18-0
Nickel carbonyl	1	10		P073	13463-39-3
Nickel chloride		100			37211-05-5
Nickel chloride		100			7718-54-9
Nickel cyanide		10		P074	557-19-7
Nickel hydroxide		10			12054-48-7

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Nickel nitrate		100			14216-75-2
Nickel sulfate		100			7786-81-4
Nicotine	100	100		P075	54-11-5
Nicotine sulfate	100/ 10,000				65-30-5
Nitrapyrin			x		1929-82-4
Nitric acid	1000	1000	x		7697-37-2
Nitric oxide	100	10		P076	10102-43-9
Nitrilotriacetic acid			x		139-13-9
p-Nitroaniline			x		100-01-6
Nitrobenzene	10,000	1000	x	U169	98-95-3
Nitrocyclohexane	500				1122-60-7
Nitrogen			x		1836-75-5
Nitrogen dioxide	100	10		P078	10102-44-0
Nitrogen dioxide		10		P078	10544-72-6
Nitroglycerine		10	x	P081	55-63-0
Nitrophenol (mixed)		100			25154-55-6
Nitrosodimethylamine	1000	10	x	P082	62-75-9
Nitrotoluene		1000			1321-12-6
Norbormide	100/ 10,000				991-42-4
Norflurazon			x		27314--13-2
O,O-Diethyl S-methyl dithiophosphate		5000		U087	3288-58-2
o-Anisidine hydrochloride			x		134-29-2

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
o-Anisidine			x		90-04-0
o-Dinitrobenzene		100	x		528-29-0
o-Nitrophenol		100	x		88-75-5
o-Nitrotoluene		1000			88-72-2
o-Toluidine		100	x	U328	95-53-4
Octachloronaphtha- lene			x		2234-13-1
Oryzalin			x		19044-88- 3
Osmium tetroxide		1000	x	P087	20816-12- 0
Ouabain	100/ 10,000				630-60-4
Oxamyl	100/ 10,000	1##		P194	23135-22- 0
Oxetane,3,3- bis(chloromethyl)-	500				78-71-7
Oxydemeton methyl			x		301-12-2
Oxydiazon			x		19666-30- 9
Oxydisulfoton	500				2497-07-6
Oxyfluorfen			x		42874-03- 3
Ozone	100		x		10028-15- 6
p-Anisidine			x		104-94-9
p-Benzoquinone		10	x	U197	106-51-4
p-Chloro-o-toluidine			x		95-69-2
p-Chloroaniline			x		106-47-8
p-Chlorophenyl iso- cyanate			x		104-12-1
p-Cresidine			x		120-71-8
p-Cresol		1000	x	U052	106-44-5

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
p-Dinitrobenzene		100	x		100-25-4
p-Nitrophenol		100	x	U170	100-02-7
p-Nitrosodiphenylamine			x		156-10-5
p-Nitrotoluene		1000			99-99-0
p-Phenylenediamine			x		106-50-3
Paraformaldehyde		1000			30525-89-4
Paraldehyde		1000	x		123-63-7
Paraquat dichloride	10/10,000		x		1910-42-5
Paraquat methosulfate	10/10,000				2074-50-2
Parathion	100	10	x	P089	56-38-2
Parathion, methyl	100/ 10,000	100		P071	298-00-0
Paris green (Cuprie acetoarsenite)	500/ 10,000	1			12002-03-8
Pebulate		1##	x	U391	1114-71-2
Pendimethalin			x		40487-42-1
Pentaborane	500				19624-22-7
Pentachloroethane		10	x	U184	76-01-7
Pentachlorophenol		10	x	U242	87-86-5
Pentadecyclamine	100/ 10,000				2570-26-5
Pentobarbital sodium			x		57-33-0
Peracetic acid	500		x		79-121-0
Permethrin			x		52645-53-1
Phenanthrene		5000	x		85-01-8
Phenol	500/ 10,000	1000	x	U188	108-95-2

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Phenol,2,2'-thio bis (4-chloro-6-methyl	100/ 10,000				4418-66-0
Phenol,2,3,4,6-tetra- chloro		10		U212	58-90-2
Phenol,2,4,5-trichloro		10	x	U230	95-95-4
Phenol,2,4,6-trichloro		10	x	U231	88-06-2
Phenol,3-(1-methyl- ethyl), methylcar- bamate	500/ 10,000	1##		P202	64-00-6
Phenothrin			x		26002-80- 2
Phenoxarsine,10,10'- oxydi-	500/ 10,000				58-36-6
Phenyl dichloroarsine	500	1		P036	696-28-6
Phenylhydrazine hydrochloride	1000/ 10,000				59-88-1
Phenylmercury ace- tate	500/ 10,000	100		P092	62-38-4
Phenylsilatrane	100/ 10,000				2097-19-0
Phenylthiourea	100/ 10,000	100		P093	103-85-5
Phenytoin			x		57-41-0
Phorate	10	10		P094	298-02-2
Phosacetim	100/ 10,000				4104-14-7
Phosfolan	100/ 10,000				947-02-4
Phosgene	10	10	x	P095	75-44-5
Phosmet	10/10,000				732-11-6
Phosphamidon	100				13171-21- 6
Phosphine	500	100	x	P096	7803-51-2

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Phosphonothioic acidmethyl-O-(4- nitrophenyl)O-phe- nyl ester	500				2665-30-7
Phosphonothioic acid, methyl-O- ethyl-O-(4-(meth- ylthio)phenyl) Ester	500				2703-13-1
Phosphonothioic acid, methyl-s-(2- (bis(1-methyl- ethyl)amino Ethyl o-Ethyl Ester	100				50782-69- 9
Phosphoric acid		5000	x		7664-38-2
Phosphoric acid, dimethyl 4-(meth- ylthio)phenyl ester	500				3254-63-5
Phosphorothioic acid, O,O-diethyl, O- pyrazinyl ester	500	100		P040	297-97-2
Phosphorothioic acid, O,O-dime- thyl-S-(2- methylthio)ethyl est	500				2587-90-8
Phosphorus	100	1	x		7723-14-0
Phosphorus oxychloride	500	1000			10025-87- 3
Phosphorus pentachloride	500				10026-13- 8
Phosphorus pentasulfide		100		U189	1314-80-3
Phosphorus pentoxide	10				1314-56-3
Phosphorus trichloride	1000	1000			7719-12-2
Physostigmine	100/ 10,000	1##		P204	57-47-6
Physostigmine, salicylate (1:1)	100/ 10,000	1##		P188	57-64-7

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Picloram			x		1918-02-1
Picric acid			x		88-89-1
Picrotoxin	500/ 10,000				124-87-8
Piperidine	1000				110-89-4
Piperonyl butoxide			x		51-03-6
Pirimifos-ethyl	1000				23505-41-1
Pirimiphos methyl			x		29232-93-7
Polychlorinated biphenyls		1	x		1336-36-3
Potassium arsenate		1			7784-41-0
Potassium arsenite	500/ 10,000	1			10124-50-2
Potassium bichro- mate		10			7778-50-9
Potassium bromate			x		7758-01-2
Potassium chromate		10			7789-00-6
Potassium cyanide	100	10		P098	151-50-8
Potassium dimeth- yldithiocarbamate		1##	x	U383	128-03-0
Potassium hydroxide		1000			1310-58-3
Potassium n- hydroxymethyl-n- methyldithiocar- bamate		1##		U378	51026-28-9
Potassium n-meth- yldithiocarbamate		1##	x	U377	137-41-7
Potassium perman- ganate		100			7722-64-7
Potassium silver cya- nide	500	1		P099	506-61-6
Profenofos			x		41198-08-7

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Promecarb	500/ 10,000	1##		P201	2631-37-0
Prometryn			x		7287-19-6
Pronamide			x		23950-58- 5
Propachlor			x		1918-16-7
Propanil			x		709-98-8
Propargite		10	x		2312-35-8
Propargyl alcohol		1000	x	P102	107-19-7
Propargyl bromide	10				106-96-7
Propfamphos			x		31218-83- 4
Propiconazole			x		60207-90- 1
Propiolactone,beta-	500		x		57-57-8
Propionaldehyde			x		123-38-6
Propionic acid		5000			79-09-4
Propionic acid,2- (2,4,5-trichlorophe- noxy)-		100		U233	93-72-1
Propionic anhydride		5000			123-62-6
Propiophenone,4'- amino-	100/ 10,000				70-69-9
Propenenitrile	500	10		P101	107-12-0
Propenenitrile,3- chloro-	1000	1000		P027	542-76-7
Propham		1##		U373	122-42-9
Propoxur			x		114-26-1
Propyl chloroformate	500				109-61-5
Propylene (Propene)			x		115-07-1
Propylene oxide	10,000	100	x		75-56-9
Propyleneimine	10,000	1	x	P067	75-55-8

(continued)



# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Prosulfocarb		1##		U387	52888-80-9
Prothoate	100/ 10,000				2275-18-5
Pyrene	1000/ 10,000	5000			129-00-0
Pyrethrins		1			121-21-1
Pyrethrins		1			121-29-9
Pyrethrins		1			8003-34-7
Pyridine		1000	x	U196	110-86-1
Pyridine,2-methyl-5-vinyl-	500				140-76-1
Pyridine,4-amino-	500/ 10,000	1000		P008	504-24-5
Pyridine,4-nitro-1-oxide	500/ 10,000				1124-33-0
Pyriminil	100/ 10,000				53558-25-1
Quinoline		5000	x		91-22-5
Quizalofop-ethyl			x		76578-14-8
Reserpine		5000		U200	50-55-5
Resmethrin			x		10453-86-8
Salcomine	500/ 10,000				14167-18-1
Sarin	10				107-44-8
Selenium		100	x		7782-49-2
Selenium dioxide		10		U204	7446-08-4
Selenium disulfide		10		U205	7448-56-4
Selenium oxychloride	500				7791-23-3
Selenium tatrakis(dimethyldithiocarbamate)		1##		U376	144-34-3

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Selenious acid	1000/ 10,000	10		U204	7783-00-8
Selenouree		1000		P103	630-10-4
Semicarbazide hydrochloride	1000/ 10,000				563-41-7
Sethoxydim			x		74051-80- 2
Silane,(4-aminobutyl) diethoxymethyl-	1000				3037-72-7
Silver		1000	x		7440-22-4
Silver cyanide		1		P104	506-64-9
Silver nitrate		1			7761-88-8
Simazine			x		122-34-9
Sodium		10			7440-23-5
Sodium arsenate	1000/ 10,000	1			7631-89-2
Sodium arsenite	500/ 10,000	1			7784-46-5
Sodium azide (Na(N <sub>3</sub> ))	500	1000	x	P105	26628-22- 8
Sodium bichromate		10			10588-01- 9
Sodium bifluoride		100			1333-83-1
Sodium bisulfite		5000			7631-90-5
Sodium cacodylate	100/ 10,000				124-65-2
Sodium chromate		10			7775-11-3
Sodium cyanide (Na(CN))	100	10		P106	143-33-9
Sodium dibutyldithio- carbamate		1##		U379	136-30-1
Sodium dicamba			x		1982-69-0
Sodium diethyldithio- carbamate		1##		U381	148-18-5

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Sodium dimeth- yldithiocarbamate		1##	x	U382	128-04-1
Sodium dodecylben- zene sulfonate		1000			25155-30- 0
Sodium fluoride		1000			7681-49-4
Sodium fluoroacetate	10/10,000	10	x	P058	62-74-8
Sodium hydrosulfide		5000			16721-80- 5
Sodium hydroxide		1000			1310-73-2
Sodium hypochlorite		100			10022-70- 5
Sodium hypochlorite		100			7681-52-9
Sodium methyate		1000			124-41-4
Sodium nitrite		100	x		7632-00-0
Sodium pentachlo- rophenate			x		131-52-2
Sodium o-phenylphe- noxide			x		132-27-4
Sodium phos- phate, dibasic		5000			10039-32- 4
Sodium phos- phate, dibasic		5000			10140-65- 5
Sodium phos- phate, dibasic		5000			7558-79-4
Sodium phosphate, tribasic		5000			10101-89- 0
Sodium phosphate, tribasic		5000			10124-56- 8
Sodium phosphate, tribasic		5000			10361-89- 4
Sodium phosphate, tribasic		5000			7601-54-9
Sodium phosphate, tribasic		5000			7758-29-4

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Sodium phosphate, tribasic		5000			7785-84-4
Sodium selenate	100/ 10,000				13410-01-0
Sodium selenite	100/ 10,000	100			10102-18-8
Sodium selenite		100			7782-82-3
Sodium tellurite	500/ 10,000				10102-20-2
Strannane,acetox- triphenyl-	500/ 10,000				900-95-8
Strontium chromate		10			7789-06-2
Strychnine	100/ 10,000	10		P108	57-24-9
Strychnine, sulfate	100/ 10,000				60-41-3
Styrene		1000	x		100-42-5
Styrene oxide			x		96-09-3
Sulfallate		1##		U277	95-06-7
Sulfotep	500	100		P109	3689-24-5
Sulfoxide,3-chloro- propyl octyl	500				3569-57-1
Sulfur dioxide	500				7446-09-5
Sulfur monochloride		1000			12771-08-3
Sulfur tetrafluoride	100				7783-60-0
Sulfur trioxide	100				7446-11-9
Sulfuric acid	1000	1000	x		7664-93-9
Sulfuric acid		1000			8014-95-7
Sulfurayl fluoride			x		2699-79-8
Sulprofos			x		35400-43-2
Tabun	10				77-81-6

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Tebuthiuron			x		34014-18-1
Tellurium	500/ 10,000				13494-80-9
Tellurium hexafluoride	100				7783-80-4
Temephos			x		3383-96-8
Terbacil			x		5902-51-2
Terbufos	100				13071-79-9
Tetrabutylthiuram		1##		U402	1634-02-2
Tetrachlorvinphos			x		961-11-5
Tetracycline hydrochloride			x		64-75-5
Tetraethyldithiopyrphosphate	100	10		P111	107-49-3
Tetraethyllead	100	10		P110	78-00-2
Tetraethyltin	100				597-64-8
Tetramethrin			x		7696-12-0
Tetramethyl Lead	100				75-74-1
Tetramethylthiuram monosulfide		1##		U401	97-74-5
Tetranitromethane	500	10		P112	509-14-8
Thallic oxide		100		P113	1314-32-5
Thallium		1000	x		7440-28-0
Thallium(1) carbonate	100/ 10,000	100		U215	6533-73-9
Thallium (I)sulfate	100/ 10,000	100		P115	10031-59-1
Thallium(I)nitrate		100		U217	10102-45-1
Thallium(I)selenide		1000		P114	12039-52-0

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Thallous chloride	100/ 10,000	100		U216	7791-73-9
Thallous malonate	100/ 10,000				2757-18-8
Thallous sulfate	100/ 10,000	100		P115	7446-18-6
Thiabendazole			x		140-79-8
Thiobencarb			x		28249-77-6
Thiocarbazide	1000/ 10,000				2231-57-4
Thiodicarb		1#	x	U410	59669-26-0
Thiofanox	100/ 10,000	100		P045	39196-18-4
Thiophanate ethyl			x		23564-06-9
Thiophanate-methyl		1##	x	U409	23564-05-8
Thiram		10	x	U244	137-26-8
Thiophenol	500	100		P014	108-98-5
Thiosemicarbazide	100/ 10,000	100	x	P116	79-19-6
Thiourea		10	x		62-56-6
Thiourea,(2-chlorophenyl)-	100/ 10,000	100		P026	5344-82-1
Thiourea, (2-methylphenyl)-	500/ 10,000				614-78-8
Thorium dioxide			x		1314-20-1
Titanium dioxide			x		13463-67-7
Titanium tetrachloride	100		x		7550-45-0
Toluene2,4-diisocyanate	500	100	x		584-84-9

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Toluene2,6-diisocyanate	100	100	x		91-08-7
Toxaphene(Campheclor)		1	x	P123	8001-35-2
trans 1,1-dichlorobutene	500				110-57-6
trans-1,3-Dichloropropene			x		10061-02-6
trans-1,4-Dichloro-2-butene			x		110-57-6
Triadimefon			x		43121-43-3
Triallate		1##	x	U389	2303-17-5
Triamiphos	500/ 10,000				1031-47-6
Triaziquone			x		68-76-8
Triazofos	500				24017-47-8
Tribenuron methyl			x		101200-48-0
Tributyltin fluoride			x		1982-10-4
Tributultin methacrylate			x		2155-70-6
S,S,S-Tributyltrithiophosphate			x		78-48-8
Triclopyr, triethylammonium salt			x		57213-69-1
Trichloroacetyl chloride	500		x		76-02-8
Trichloro(chloromethyl) silane	100				1558-25-4
Trichloro(dichlorophenyl) silane	500				27137-85-5
Trichloroethylene		100	x	U228	79-01-6
Trichloroethylsilane	500				115-21-9

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Trichlorofon		100	x		52-68-6
Trichloronate	500				327-98-0
Trichlorophenol		10			25167-82-2
Trichlorophenylsilane	500				98-13-5
Triethanolamine dode-cylbenzene sulfonate		1000			27323-41-7
Triethoxysilane	500				998-30-1
Triethylamine		5000	x		121-44-8
Trifluralin			x		1582-09-8
Triforine			x		26644--46-2
Trimethylamine		100			75-50-3
Trimethylchlorosilane	1000		x		75-77-4
Trimethylolpropane phosphite	100/ 10,000				824-11-3
Trimethyltin chloride	500/ 10,000				1066-45-1
Triphenyltin chloride	500/ 10,000		x		639-58-7
Triphenyltin hydrox- ide			x		76-87-9
Tris(2-chloroethyl) amine	100				555-77-1
Trypan blue		10	x	U236	72-57-1
Uracil,5-[bis(2-chloro- ethyl)amino]-		10		U237	66-75-1
Uranyl acetate		100			541-09-3
Uranyl nitrate		100			10102-06-4
Uranyl nitrate		100			36478-76-9

(continued)



### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Valinomycin	1000/ 10,000				2001-95-8
Vanadium(fume or dust)			x		7440-62-2
Vanadium pentoxide	100/ 10,000	1000		P120	1314-62-1
Vanadyl sulfate		1000			27774-13- 6
Vernolate		1##		U385	1929-77-7
Vinclozolin			x		50471-44- 8
Vinyl acetate	1000	5000	x		108-05-4
Vinyl bromide			x		593-60-2
Warfarin	500/ 10,000	100		P001	81-81-2
Warfarin sodium	100/ 10,000				129-06-6
Xylenol		1000			1300-71-6
Xylylene dichloride	100/ 10,000				28347-13- 9
Zinc		1000	x		7440-66-6
Zinc acetate		1000			557-34-6
Zinc ammonium chlo- ride		1000			52628-25- 8
Zinc ammonium chlo- ride		1000			14639-97- 5
Zinc ammonium chlo- ride		1000			14639-98- 6
Zinc borate		1000			1332-07-6
Zinc bromide		1000			7699-45-8
Zinc carbonate		1000			3486-35-9
Zinc chloride		1000			7646-85-7
Zinc cyanide		10		P121	557-21-1

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Zinc, dichloro(4,4- dimethyl-5(( (methylamino) carbonyl)oxy)imino) Pentane-nitrile)-(T-4)	100/ 10,000				58270-08- 9
Zinc fluoride		1000			7783-49-5
Zinc formate		1000			557-41-5
Zinc hydrosulfite		1000			7779-86-4
Zinc nitrate		1000			7779-88-6
Zinc phenolsulfonate		5000			127-82-2
Zinc phosphide	500	100		P122	1314-84-7
Zinc silicofluoride		5000			16871-71- 9
Zinc sulfate		1000			7733-02-0
Zineb			x		12122-67- 7
Ziram		1##		P205	137-30-4
Zirconium nitrate		5000			13746-89- 9
Zirconium potassium fluoride		1000			16923-95- 8
Zirconium sulfate		5000			14644-61- 2
Zirconium tetrachlo- ride		5000			10026-11- 6

## Appendix 3-2

### Maximum Allowable Capacity of Containers and Portable Tanks (29 CFR 1910.106(d)(2), Table H-12)

Container Type	Flammable Liquids			Combustible Liquids	
	Class IA	Class IB	Class IC	Class II	Class III
Glass or approved plastic	1 pt [0.47 L]	1 qt [0.95 L]	1 gal [3.79 L]	1 gal [3.79 L]	1 gal [3.79 L]
Metal (other than DOT drums)	1 gal [3.79 L]	5 gal [18.93 L]	5 gal [18.93 L]	5 gal [18.93 L]	5 gal [18.93 L]
Safety cans	2 gal [7.57 L]	5 gal [18.93 L]	5 gal [18.93 L]	5 gal [18.93 L]	5 gal [18.93 L]
Metal drums (DOT specifications)	60 gal [227.12 L]	60 gal [227.12 L]	60 gal [227.12 L]	60 gal [227.12 L]	60 gal [227.12 L]
Approved portable tanks	660 gal [2498.37 L]	660 gal [2498.37 L]	660 gal [2498.37 L]	660 gal [2498.37 L]	660 gal [2498.37 L]



### Appendix 3-3

#### Storage in Inside Rooms (29 CFR 1910.106(d)(4), Table H-13)

Fire Protection Provided <sup>1</sup>	Fire Resistance (hours)	Maximum Size	Total Allowable Quantities (gal/ft <sup>2</sup> floor area)
Yes	2	500 ft <sup>2</sup> [46.45 m <sup>2</sup> ]	10 [37.85 L]
No	2	500 ft <sup>2</sup> [46.45 m <sup>2</sup> ]	5 [18.93 L]
Yes	1	150 ft <sup>2</sup> [13.94 m <sup>2</sup> ]	4 [15.14 L]
No	1	150 ft <sup>2</sup> [13.94 m <sup>2</sup> ]	2 [7.57 L]

<sup>1</sup>Fire protection system will be sprinkler, water spray, or other approved method.



## Appendix 3-4

### Flammable/Combustible Materials (29 CFR 1910.106(d)(5) and 1910.106(d)(6), Tables H-14 through H-17)

#### Indoor Container Storage

Class	Liquid Storage Level	Protected Storage Maximum per Pile	Unprotected Storage Minimum per Pile
A	Ground and upper floors	2750 gal [10409.88 L] (50)	600 gal [2271.25 L] (12)
	Basement	Not permitted	Not permitted
B	Ground and upper floors	5500 gal [20819.77 L] (100)	1375 gal [5204.94 L] (25)
	Basement	Not permitted	Not permitted
C	Ground and upper floors	16,500 gal [62459.30 L] (300)	4125 gal [15614.82 L] (25)
	Basement	Not permitted	Not permitted
II	Ground and upper floors	16,500 gal [62459.30 L] (300)	4125 gal [15614.82 L] (75)
	Basement	5500 gal [20819.77 L] (100)	Not permitted
III	Ground and upper floors	55,000 gal [208197.66 L] (1000)	13,750 gal [52049.42 L] (250)
	Basement	8250 gal [31229.65 L] (450)	Not permitted

(NOTE: Numbers in parenthesis indicate corresponding number of 55-gal drums.)

NOTE 1: When two or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile will be the smallest of the two or more separate maximum gallonages.

NOTE 2: Aisles will be provided so that no container is more than 12 ft [3.66 m] from an aisle. Main aisles will be at least 3 ft [0.91 m] wide and side aisles at least 4-ft [1.22-m] wide.

NOTE 3: Each pile shall be separated from the others by at least 4 ft [1.22 m].

(continued)

## Appendix 3-4 (continued)

### Outdoor Container Storage

1 Class	2 Maximum per pile (gal) [L]	3 Distance between piles (ft) [m]	4 Distance to property line that can be built upon (ft) [m]	5 Distance to street, alley or public way (ft) [m]
IA	1100 [4163.95]	5 [1.52]	20 [6.10]	10 [3.05]
IB	2200 [8327.91]	5 [1.52]	20 [6.10]	10 [3.05]
IC	4400 [44003.79]	5 [1.52]	20 [6.10]	10 [3.05]
II	8800 [33311.63]	5 [1.52]	10 [3.05]	5 [1.52]
III	22,000 [83279.06]	5 [1.52]	10 [3.05]	5 [1.52]

NOTE 1: When two or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile will be the smallest of the two or more separate gallonages.

NOTE 2: Within 200 ft [60.96 m] of each container, there will be a 12-ft [3.66-m] wide access way to permit approach of fire control apparatus.

NOTE 3: The distances listed apply to properties that have protection for exposures as defined. If there are exposures and such protection for exposures does not exist, the distances in column 4 will need to be doubled.

NOTE 4: When total quantity stored does not exceed 50 percent of maximum per pile, the distance in columns 4 and 5 may be reduced 50 percent, but not less than 3 ft [0.91 m].

(continued)



## Appendix 3-4 (continued)

### Indoor Portable Tank Storage

Class Liquid	Storage Level	Protected Storage Maximum per Pile (gal) [L]	Unprotected Storage Minimum per Pile (gal) [L]
IA	Ground and upper floors Basement	Not permitted Not permitted	Not permitted Not permitted
IB	Ground and upper floors Basement	20,000 [75708.24] Not permitted	2000 [7570.82] Not permitted
IC	Ground and upper floors Basement	40,000 [151420.48] Not permitted	5500 [20820.32] Not permitted
II	Ground and upper floors Basement	40,000 [151420.48] 20,000 [75708.24]	5500 [20820.32] Not permitted
III	Ground and upper floors Basement	60,000 [227124.72] 20,000 [75708.24]	22,000 [83279.06] Not permitted

NOTE 1: When one or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile will be the smallest of the two or more separate maximum gallonages.

NOTE 2: Aisles will be provided so that no container is more than 12 ft [3.66 m] from an aisle. Main aisles will be at least 3 ft [.91 m] wide and side aisles at least 4-ft [1.22-m] wide.

NOTE 3: Each pile shall be separated from each other by at least 4 ft [1.22 m].

(continued)

## Appendix 3-4 (continued)

### Outdoor Portable Tank Storage

1 Class	2 Maximum per pile (gal) [L]	3 Distance between piles (ft) [m]	4 Distance to property line that can be built upon (ft) [m]	5 Distance to street, alley, or public way (ft) [m]
IA	2200 [8327.95]	5 [1.52]	20 [6.10]	10 [3.05]
IB	4400 [44003.79]	5 [1.52]	20 [6.10]	10 [3.05]
IC	8800 [33311.63]	5 [1.52]	20 [6.10]	10 [3.05]
II	17,600 [66623.25]	5 [1.52]	10 [3.05]	5 [1.52]
III	44,000 [166558.12]	5 [1.52]	10 [3.05]	5 [1.52]

NOTE 1: When two or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile will be the smallest of the two or more separate gallonages.

NOTE 2: Within 200 ft [60.96 m] of each container, there will be a 12-ft [3.66-m] wide access way to permit approach of fire control apparatus.

NOTE 3: The distances listed apply to properties that have protection for exposures as defined. If there are exposures, and such protection for exposures does not exist, the distances in column 4 will be doubled.

NOTE 4: When total quantity stored does not exceed 50 percent of maximum per pile, the distance in columns 4 and 5 may be reduced 50 percent, but not less than 3 ft [0.91 m].

## Appendix 3-5

### Potentially Incompatible Hazardous Materials (40 CFR 264, Appendix V))

The following are examples of potentially incompatible materials, along with the harmful consequences that result from mixing materials in one group with materials in another group. The list is intended as a guide to indicate the need for special precautions when managing these potentially incompatible waste materials or components. This list is not intended to be exhaustive.

In the following lists, the mixing of a Group A material with a Group B material may have the potential consequences as noted.

#### Potential Consequences: Heat generation, violent reaction.

Group 1-A	Group 1-B
Acetylene sludge Alkaline caustic liquids Alkaline cleaner Alkaline corrosive liquids Alkaline corrosive battery acid Caustic wastewater Lime sludge and other corrosive alkalies Lime wastewater Lime and water Spent caustic	Acid sludge Acid and water Battery acid Chemical cleaners Electrolyte, acid Etching acid liquid or solvent Pickling liquor and other corrosive acids Spent acid Spent mixed acid Spent sulfuric acid

#### Potential Consequences: Fire or explosion, generation of flammable hydrogen gas.

Group 2-A	Group 2-B
Aluminum Beryllium Calcium Lithium Magnesium Potassium Sodium Zinc powder Other reactive metals and metal hydrides	Any waste in Group 1-A or 1-B

(continued)

### Appendix 3-5 (continued)

**Potential Consequences:** Fire, explosion, or heat generation; generation of flammable or toxic gases.

Group 3-A	Group 3-B
Alcohols Water	Any concentrated waste in Groups 1-A or 1-B Calcium Lithium Metal hydrides Potassium SO <sub>2</sub> , Cl <sub>2</sub> , SOCl <sub>2</sub> , PCl <sub>3</sub> , CH <sub>3</sub> , SiCl <sub>3</sub> Other water-reactive waste

**Potential Consequences:** Fire or explosion, violent reaction.

Group 4-A	Group-4-b
Alcohols Aldehydes Halogenated hydrocarbons Nitrated hydrocarbons Unsaturated hydrocarbons Other reactive organic compounds and solvents	Concentrated Group 1-A or Group 1-B wastes Group 2-A wastes

**Potential Consequences:** Generation of toxic hydrogen cyanide or hydrogen sulfide gas.

Group 5-A	Group 5-B
Spent cyanide and sulfide solutions	Group 1-B wastes

**Potential Consequences:** Fire, explosion, or violent reaction.

Group 6-A	Group 6-B
Chlorates Chlorine Chlorites Chromic acid Hypochlorites Nitrates Nitric acid, fuming Perchlorates Permanganates Peroxides Other strong oxidizers	Acetic acid and other organic acids Concentrated mineral acids Group 2-A wastes Group 4-A wastes Other flammable and combustible wastes

## Appendix 3-6

### Placarding Guidelines

The following table specifies placards that should be used for the transportation of ANY QUANTITY of the listed hazardous material.

Hazardous Materials	
Classed or Described As	Placards
Class A Explosives	EXPLOSIVES A
Class B Explosives	EXPLOSIVES B
Poison A	POISON GAS
Flammable Solid	FLAMMABLE SOLID

(NOTE: Any of the above substances that are dangerous when wet should also have the placard: DANGEROUS WHEN WET, in addition to their primary placard.)

The following table specifies placards that should be used for the transportation of 1000 lb [454.55 kg] or more of the listed hazardous materials.

Hazardous Materials	
<i>Classed or Described As</i>	<i>Placards</i>
Class C Explosives	FLAMMABLE
Nonflammable Gas	NONFLAMMABLE GAS
Nonflammable Gas (Chlorine)	CHLORINE
Nonflammable Gas (Fluorine)	POISON
Nonflammable Gas (Oxygen, pressurized liquid)	OXYGEN
Flammable Gas	FLAMMABLE GAS
Combustible Liquid	COMBUSTIBLE
Flammable Liquid	FLAMMABLE
Flammable Solid	FLAMMABLE SOLID
Oxidizer	OXIDIZER
Organic Peroxide	ORGANIC PEROXIDE
Poison B	POISON
Corrosive Material	CORROSIVE
Irritating Material	DANGEROUS

(continued)

### Appendix 3-6 (continued)

1. Placards should be affixed on both sides, rear and front, of the motor vehicle.
2. Place placards clear of ladders, pipes, and tarps.
3. Placards should be at least 3 in. away from advertising and markings.
4. The DANGEROUS placards may be used when a motor vehicle contains two or more classes of hazardous materials requiring different placards. The DANGEROUS placard may be used in place of the separate placards for each class.
5. Portable tanks having a rated capacity of 1000 gal [454.55 kg] or more must be placarded.
6. Cargo tanks having any quantity of hazardous material must be placarded.

<b>FACILITY:</b>	<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS MATERIALS MANAGEMENT</b> Fish and Wildlife Service	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> NA      C      RMA	<b>REVIEWER CHECKS:</b>		

## **SECTION 4**

### **HAZARDOUS WASTE MANAGEMENT**

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**The contents of this section are the minimum requirements the auditor must review. The auditor must also review applicable state and local regulations.**



## SECTION 4

### HAZARDOUS WASTE MANAGEMENT

#### A. Applicability

This section applies to FWS facilities that generate, store, transport, treat, or dispose of any type of hazardous waste. Federal regulations establish different regulatory requirements based on the amount of hazardous waste generated.

This section and its associated evaluation checklists are more complex than other sections in this volume. Not all evaluation items will be applicable to a facility. Guidance is provided on the checklists to direct the evaluator to the regulations concerning the type of hazardous waste activities/facilities on the facility. This section does not include the requirements which apply to the operation and management of a treatment, storage, or disposal facility since the large majority of FWS facilities do not fall under this classification. But a checklist supplement which covers the requirements for treatment, storage, and disposal facilities (TSDFs) is available from the Service Pollution Control Office (SPCO).

#### B. Federal Legislation

- *The Resource Conservation and Recovery Act (RCRA)*, Subtitle C. This law, Public Law (PL) 98-616 (42 U.S. Code (USC) 6921-6939b) establishes standards and procedures for the handling, storage, treatment, and disposal of hazardous waste.
- *The Federal Facility Compliance Act (FFCA)* of 1992. This act provides for a waiver of sovereign immunity with respect to Federal, state, and local procedural and substantive requirements relating to RCRA solid and hazardous waste laws and regulations. Additionally, it defines hazardous waste in relation to public vessels, expands the definition of mixed waste, addresses the issue of munitions, and discusses waste discharges to Federally owned treatment works (FOTWs).
- *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)* of 1980. This act was amended by the *Superfund Amendments and Reauthorization Act (SARA)* of 1986, 42 USC 9601-11050 and 10 USC 2701-2810 et. al. This act has four basic elements. The first element is the establishment of an information gathering and analysis system for the characterization of contaminated sites. This information is used in the development of the USEPA's National Priorities List (NPL). The second element is the establishment of Federal authority to respond to hazardous substance emergencies and cleanup leaking sites. The third element is the creation of a trust fund to pay for removal and remedial actions. The fourth element makes persons who are responsible for hazardous substance releases liable for cleanup and restitution costs.
- *Community Environmental Response Facilitation Act*. This act, PL 102-426, amends CERCLA. It requires that prior to the termination of federal activities on any real property owned by the Federal Government, agencies must identify real property where no hazardous substance was stored, released, or disposed of. The purpose is to identify property that offers the greatest opportunity for reuse and redevelopment.

- Executive Order (EO) 12580, *Superfund Implementation*. This EO, dated 23 January 1987, mandates the development of the National Response Team (NRT) and redelegates authority for various functions related to Superfund from the President to other Federal agencies.
- Federal regulations used to develop the checklist include:
  - 40 CFR 260, *Hazardous Waste Management System: General*.
  - 40 CFR 261, *Identification and Listing of Hazardous Waste*.
  - 40 CFR 262, *Standards Applicable to Generators of Hazardous Waste*.
  - 40 CFR 263, *Standards Applicable to Transporters of Hazardous Waste*.
  - 40 CFR 264, *Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities*.
  - 40 CFR 265, *Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities*.
  - 40 CFR 266, *Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities*.
  - 40 CFR 268, *Land Disposal Restrictions*.
  - 49 CFR 172-179, *Transportation Regulations*.

### C. State/Local Regulations

Many states have met the U.S. Environmental Protection Agency (USEPA) requirements in 40 CFR 271 and have been authorized to manage their own state programs. RCRA encourages states to develop their own hazardous waste statutes and to operate regulatory programs. Many states have adopted the USEPA regulations by reference or have promulgated regulations which are identical to the USEPA regulations, while other states have promulgated regulations stricter than the Federal RCRA. These differences between individual state regulations and the Federal program require that evaluators check the status of the state's authorization and then determine which regulations apply. Since the section checklists are based exclusively on the requirements of the Federal RCRA/USEPA program, it is necessary to determine in what ways the applicable state program differs from the RCRA/USEPA program.

### D. FWS/DOI Manuals

- 561 FW 6, *Compliance Requirements RCRA - Hazardous Waste*. This chapter, dated 9 July 1995, provides guidance for RCRA hazardous waste management at Service facilities.

### E. Key Compliance Requirements

- **Generator Requirements** - Responsibilities of facilities are based on the amount of waste being generated in 1 mo. Typical wastes include solvents, paint, contaminated antifreeze or oil, and sludges. In some states, used oil and other substances have been classified as a hazardous waste and therefore need to be included in the total amount of waste being generated. Within Federal regulations there are three classifications:

1. A conditionally exempt small quantity generator (CESQG) produces no more than 100 kg [220.46 lb] of hazardous waste and no more than 1 kg [2.20 lb] of acute hazardous waste in any calendar month. They also do not accumulate onsite more than 1000 kg [2204.62 lb] of waste at any one time. When either the volume of waste produced in 1 mo exceeds 100 kg [220.46 lb] of nonacutely hazardous waste or more than 1 kg [2.20 lb] of acutely hazardous waste or more than 1000 kg [2204.62 lb] of waste has accumulated onsite, the facility is required to comply with the more stringent standards applicable to a small quantity generator (SQG) or a Generator.
2. An SQG produces between 100 [220.46 lb] and 1000 kg [2204.62 lb] of hazardous waste and no more than 1 kg [2.20 lb] acute hazardous waste in any calendar month. The waste cannot accumulate onsite for more than 180 days unless the waste must be transported more than 200 mi [321.87 km] to a TSDF. In that situation, the waste can accumulate for 270 days. But at no time is there to be more than 6000 kg [13,227.73 lb] of waste accumulated at the facility. When the accumulation time onsite is exceeded, or more than 6000 kg [13,227.73 lb] of waste is onsite, the facility is required to apply for a permit and comply with the standards of 40 CFR 264 and 40 CFR 265.
3. A Generator produces 1000 kg [2204.62 lb] or more of hazardous waste or more than 1 kg [2.20 lb] acute hazardous waste in any calendar month. This classification is sometimes referred to as a large quantity generator.

(NOTE: Using water, which weighs 8.34 lb/gal [3.78 kg/gal] as a basis of measurement, 100 kg [220.46 lb] would equal about 26.5 gal [100.31 L], 1000 kg [2204.62 lb] would equal about 265 gal [1003 L]).

Whether the facility is a CESQG, an SQG, or a Generator determines the type of records the facility is required to keep and design standards for storage areas. Storage areas connected with a generation point are often referred to as accumulation points.

Regardless of the amount of hazardous waste generated, every facility is required to test or use knowledge of materials or processes used to determine if it is a listed hazardous waste or has hazardous characteristics. Every facility is also required to store and/or accumulate hazardous waste in containers that are compatible with the waste, undamaged, and labeled to indicate the contents.

#### Comparison of RCRA Generator Requirements

Requirement	CESQG	SQG	Generator
Identify HW	Yes	Yes	Yes
Quantity Limits	£100 kg/mo [220.46 lb/m]	100 kg/mo [220.46 lb] - 1000 kg/mo [2204.62 lb]	>1000 kg/mo [2204.62 lb/mo]
Acute Waste Limits	£ 1 kg/mo [2.20 lb/mo]	£ 1 kg/mo [2.20 lb/mo]	any quantity
Facility Receiving Waste	State approved or RCRA permitted	RCRA permitted facility	RCRA permitted facility
USEPA ID Number	Not Required	Required	Required

### Comparison of RCRA Generator Requirements

Requirement	CESQG	SQG	Generator
RCRA Personnel Training	Not Required	Basic Training Required	Required
DOT Training	Required	Required	Required
Exception Report	Not Required	Required > 60 days	Required > 45 days
Biennial Report	Not Required	Not Required	Required
Onsite Accumulation Limits (without permit)	£ 1000 kg [2204.62 lb]	£ 6000kg [13,227.73 lb]	Any quantity
Accumulation Time Limits (without permit)	None	£ 180 days or £ 270 days (>200 mi [321.87 km])	£ 90 days + 30 days granted by USEPA
Storage Requirements	None	Basic requirements with technical standards for containers or tanks	Full compliance with management of containers or tanks
Use Manifests	No	Yes*	Yes

\* Unless the waste is reclaimed under contractual agreement and properly marked and labeled.

- **Transport Requirements** - Containers of hazardous waste shipped offsite must be labeled to identify the waste and its hazard class. Transporters of hazardous waste required to be manifested must have a USEPA identification number and must comply with manifest management requirements.
- **Accumulation Point Management** - An accumulation point is an area where hazardous waste is accumulated or stored before being turned in for disposal. Storage in these areas is temporary, and the permissible length of time for accumulation depends on what size generator the facility is.
- **Satellite Accumulation Point Management** - A satellite accumulation point is an area at which no more than 55 gal [208.20 L] of a hazardous waste or 1 qt [0.95 L] of an acute hazardous waste is accumulated at or near the point of generation. The satellite accumulation point is under the control of one operator of the process generating the waste. When the 55 gal [208.20 L] limit is reached the operator has 3 days to move the waste to a 90-day or permitted storage area or a permitted TSDF. These standards only apply to an SQG or a Generator.
- **Universal Wastes** - These requirements apply to batteries, pesticides, and thermostats as defined in 40 CFR 273. They are alternate standards for the handling of these wastes instead of the requirements found in 40 CFR part 260 through part 272. Handlers can be classified as either a large quantity handler of universal waste (5000 kg [11,111 lb] or more in 1 yr) or a small quantity handler of universal waste (less than 5000 kg [11,111 lb] in 1 yr). Depending on classification, the handler has to meet requirements concerning management of the waste, marking and labeling, notifications, and transportation. Additionally,

there are standards for universal waste transporters and universal waste destination facilities (40 CFR 273).

- **Recordkeeping** - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

#### **F. Key Compliance Definitions**

- **Aboveground Tank** - a device that meets the definition of a tank in 40 CFR 260.10 and that is situated in such a way that the entire surface area of the tank is completely above the plane of the adjacent surrounding surface and the entire surface area of the tank (including the tank bottom) is able to be visually inspected (40 CFR 260.10).
- **Active Life** - the period from the initial receipt of hazardous waste at the facility until the Regional Administrator receives certification of final closure (40 CFR 260.10).
- **Acute Hazardous Waste** - any waste listed under 40 CFR 261.31 - 261.33(c) with a hazard code of H. These include USEPA Hazardous waste numbers: F020, F021, F022, F023, F026, and F027 (40 CFR 261.31 through 261.33).
- **Aquifer** - a geologic formation or group of formations, or part of a formation, capable of yielding a significant amount of groundwater to wells or springs (40 CFR 260.10).
- **Average Volatile Organic (VO) Concentration** - the mass-weighted average VO concentration of a hazardous waste (40 CFR 265.1081).
- **Battery** - a device consisting of one or more electrically connected electrochemical cells which is designed to receive, store, and deliver electric energy. An electroplating cell is a system consisting of an anode, cathode, and an electrolyte, plus such connections (electrical and mechanical) as may be needed to allow the cell to deliver or receive electrical energy. The term battery also includes an intact, unbroken battery from which the electrolyte has been removed (40 CFR 262.10 and 273.6).

In relation to the concept of universal wastes, this term includes all batteries except the following (40 CFR 273.2(b)):

1. spent lead acid batteries that are managed under 40 CFR part 266, Subpart G [reclamation of spent lead acid batteries that are recyclable]
  2. batteries as defined above that are not yet wastes under Part 261, including those that do not meet the criteria for waste generation (see definition of Waste Battery)
  3. batteries as defined above that are not hazardous waste. A battery is a hazardous waste if it exhibits one or more of the characteristics identified in 40 CFR part 261, Subpart C.
- **Boiler** - an enclosed device using controlled flame combustion and having the following characteristics (40 CFR 260.10):
    1. the unit has physical provisions for recovering and exporting thermal energy in the form of steam, heated fluids, or heated gases

2. the unit's combustion chamber and primary energy recovery section(s) must be of integral design
  3. while in operation, the unit maintains a thermal energy recovery efficiency of at least 60 percent
  4. the unit exports and utilizes at least 75 percent of the recovered energy
  5. the unit has been approved by the Administrator.
- *Certification* - a statement of professional opinion based upon knowledge and belief (40 CFR 260.10).
  - *Characteristics of Hazardous Waste* - the characteristics of ignitibility, corrosivity, reactivity, and toxicity which identify hazardous waste (40 CFR 261.20 through 261.24).
  - *Closed Portion* - the portion of a facility which has been closed in accordance with the approved closure plan and all applicable closure requirements (40 CFR 260.10).
  - *Component* - refers to either the tank or the ancillary equipment of the tank system (40 CFR 260.10).
  - *Consignee* - the ultimate treatment, storage, or disposal facility in a receiving country to which the hazardous waste will be sent (40 CFR 262.51).
  - *Container* - any portable device in which a material is stored, transported, treated, disposed of, or otherwise handled (40 CFR 260.10).
  - *Containment Building* - a hazardous waste management unit that is used to store or treat hazardous waste under 40 CFR 264.1100 through 264.1103 and 40 CFR 265.1100 through 1103 (40 CFR 260.10).
  - *Contingency Plan* - a document setting out an organized, planned, and coordinated course of action to be followed in case of a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment (40 CFR 260.10).
  - *Corrosion Expert* - a person who, by reason of knowledge of the physical sciences and the principles of engineering and mathematics, acquired by a professional education and related practical experiences, is qualified to engage in the practice of corrosion control on buried or submerged metal piping systems and metal tanks. Such a person must be certified as being qualified by the National Association of Corrosion Engineers (NACE) or be a registered professional engineer who has certification and licensing that includes education and experience in corrosion control and/or buried or submerged metal piping systems or tanks (40 CFR 260.10).
  - *Cover* - a device or system which is placed on or over a hazardous waste such that the entire hazardous waste surface area is enclosed and sealed to reduce air emissions to the atmosphere. A cover may have openings, such as access hatches, sampling ports, and gauge wells that are necessary for operation, inspection, and maintenance, or repair of the unit on which the cover is installed provided that each opening is closed and sealed when not in use. Examples include a fixed roof installed on a tank, a floating membrane on a

surface impoundment, a lid installed on a drum, and an enclosure in which an open container is placed during waste treatment (40 CFR 265.1081).

- *Debris* - solid material exceeding a 60 mm particle size that is intended for disposal and that is: a manufactured object; or plant or animal matter; or natural geologic material. The following materials are not debris: any material for which a specific treatment standard is provided; process residuals such as smelter slag and residues from the treatment of waste, wastewater, sludges, or air emissions residues; and intact containers of hazardous waste that are not ruptured and retain at least 75 percent of their original volume (40 CFR 268.2).
- *Designated Facility* - a hazardous waste TSD facility that is identified on a manifest as the destination of a hazardous waste shipment. The facility must have an appropriate permit, interim status, or be regulated under specific recycling requirements (40 CFR 260.10).
- *Destination Facility* - a facility that treats, disposes of, or recycles a particular category of universal waste, small quantity handlers of universal waste batteries and thermostats or a large quantity handlers or universal waste batteries or thermostats. A facility at which a particular category of universal waste is only accumulated is not a destination facility for the purposes of managing that category of universal waste (40 CFR 262.10 and 273.6).
- *Dike* - an embankment or ridge of either natural or manmade materials used to prevent the movement of liquids, sludges, solids, or other materials (40 CFR 260.10).
- *Discharge or Hazardous Waste Discharge* - the accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of hazardous waste into or on any land or water (40 CFR 260.10).
- *Disposal* - the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including groundwaters (40 CFR 260.10).
- *EPA Acknowledgment of Consent* - the cable sent to the USEPA from the U.S. Embassy in a receiving country that acknowledges the written consent of the receiving country to accept the hazardous waste and describes the terms and conditions of the receiving country's consent to the shipment (40 CFR 262.51).
- *EPA Hazardous Waste Number* - the number assigned by USEPA to each hazardous waste listed in Part 261, Subpart D and to each characteristic identified in Part 261, Subpart C (40 CFR 260.10).
- *EPA Identification Number* - the number assigned by USEPA to each generator, transporter, and treatment, storage, or disposal facility (40 CFR 260.10).
- *Exempted Hazardous Waste Management Unit* - in relation to air emissions standards, this is (40 CFR 264.1080(b) and 265.1080(b).):
  1. a waste management unit that holds hazardous waste placed in the unit before 5 June 1995, and in which no hazardous waste is added to the unit on or after 5 June 1995

2. a waste management unit that is used solely for the onsite treatment or storage of hazardous waste that is generated as the result of implementing remedial activities required under corrective action authorities
3. a waste management unit that is used solely for the management of radioactive mixed waste in accordance with all applicable regulations under the *Atomic Energy Act* and the *Nuclear Waste Policy Act*.
4. a container that has a design capacity less than or equal to 0.1 m<sup>3</sup>
5. a tank in which an owner/operator has stopped adding hazardous waste and the owner operator has begun implementing or completed closure pursuant to an approved closure plan
6. a surface impoundment in which the owner operator has stopped adding hazardous waste (except to implement an approved closure plan) and the owner/operator has begun implementing or completed closure pursuant to an approved closure plan

Additionally, waste management units are exempt from these requirements if all hazardous waste in the unit is determined to meet either of the following conditions (40 CFR 264.1082(c) and 265.1083(c)):

1. the average VO concentration of the hazardous waste at the point of waste origination is less than 100 ppmw
2. the organic content of the hazardous waste has been reduced by an organic destruction or removal process that achieves any of the following conditions:
  - a. a process that removes or destroys the organics to a level such that the average VO concentration of the hazardous waste at the point of waste treatment is less than the exit concentration limit established for the process
  - b. a process that removes or destroys the organics contained in the hazardous waste to such a level that the organic reduction efficiency for the process is equal to or greater than 95 percent, and the average VO concentration of the hazardous waste at the point of waste treatment is less than 50 ppmw
  - c. a process that removes or destroys the organics contained in the hazardous waste to such a level that the actual organic mass removal rate for the process is greater than the required organic mass removal rate established for the process
  - d. a biological process that destroys or degrades the organics contained in the hazardous waste such that either of the following is met:
    - i. the organic reduction efficiency for the process is equal to or greater than 95 percent and the organic biodegradation efficiency for the process is equal to or greater than 95 percent
    - ii. the total actual organic mass biodegradation rate for all hazardous waste treated by the process is equal to or greater than the required organic mass removal rate
  - e. a process that removes or destroys the organics contained in the hazardous waste and meets all the following conditions:
    - i. all the materials entering the process are hazardous wastes
    - ii. from the point of waste origination through the point where the hazardous waste enters the process, the hazardous waste is continuously managed in waste management units which use air emissions controls as applicable to the waste management unit
    - iii. the average VO concentration of the hazardous waste at the point of waste treatment is less than the lowest average VO concentration at the point of waste origination determined for each of the individual hazardous waste streams entering the process or 100 ppmw, whichever value is lower



- f. a hazardous waste incinerator for which the owner/operator has either been issued a final permit or has certified compliance
  - g. a boiler or industrial furnace for which the owner or operator has been issued a final permit or has certified compliance.
- *Existing Hazardous Waste Management (HWM) Facility or Existing Facility* - a facility which was in operation or for which construction commenced on or before 19 November 1980 (40 CFR 260.10).
  - *Existing Portion* - the land surface area of an existing waste management unit, included in the original Part A permit application, on which wastes have been placed prior to the issuance of a permit (40 CFR 260.10).
  - *Existing Tank System or Existing Component* - a tank system or component that is used for the storage or treatment of hazardous waste and that is in operation, or for which installation has commenced on or before 14 July 1986. Installations will have been considered to be commenced if the owner or operator has obtained all Federal, state, and local approvals or permits necessary to begin physical construction of the site or installation of the tank system and if either (40 CFR 260.20):
    1. a continuous onsite physical construction of the site or installation program has begun
    2. the owner or operator has entered into contractual obligations that cannot be canceled or modified without substantial loss for physical construction of the site or installation of the tank system to be completed within a reasonable time.
  - *External Floating Roof* - a pontoon or double-deck type floating roof that rests on the surface of a hazardous waste being managed in a tank that has no fixed roof (40 CFR 265.1081).
  - *Facility* - all contiguous land and structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units (e.g., one or more landfills, surface impoundments, or combination of them) (40 CFR 260.10).
  - *Final Closure* - the closure of all hazardous waste management units at the facility in accordance with all applicable closure requirements so that hazardous waste management activities under 40 CFR 264 and 265 are no longer conducted at the facility unless subject to the provisions of 262.34 (40 CFR 260.10).
  - *Fixed Roof* - a rigid cover that is installed in a stationary position so that it does not move with fluctuations in the level the hazardous waste placed in a tank (40 CFR 265.1081).
  - *Floating Membrane Cover* - a cover consisting of a synthetic flexible membrane material that rests upon and is supported by the hazardous waste being managed in a surface impoundment (40 CFR 265.1081).
  - *Floating Roof* - a pontoon type or double deck type cover that rests upon and is supported by the hazardous waste being managed in a tank, and is equipped with a closure seal or seals to close the space between the cover edge and the wall edge (40 CFR 265.1081).

- *Food-Chain Crops* - tobacco, crops grown for human consumption, and crops grown for feed for animals whose products are consumed by humans (40 CFR 260.10).
- *Free Liquids* - liquids which readily separate from the solid portion of a waste under ambient temperature and pressure (40 CFR 260.10).
- *Freeboard* - the vertical distance between the top of a tank or surface impoundment dike, and the surface of the waste contained within it (40 CFR 260.10).
- *Generator* - any person, by site, whose act or process produces hazardous waste identified or listed in 40 CFR 261, or whose act first causes a hazardous waste to become subject to regulation (40 CFR 260.10). (NOTE: This typically is used to refer to a facility producing hazardous waste in quantities greater than 1000 kg/mo [2204.62 lb/mo].)
- *Groundwater* - water below the land surface in a zone of saturation (40 CFR 260.10).
- *Halogenated Organic Compounds (HOC)* - those compounds having a carbon-halogen bond which are listed in Appendix III or 40 CFR 268 (40 CFR 268.2).
- *Hazardous Debris* - debris that contains a hazardous waste listed in Subpart D or Part 261 or that exhibits a characteristic of hazardous waste (40 CFR 268.2).
- *Hazardous Waste* - a solid waste identified as a characteristic or listed hazardous waste in 40 CFR 261.3 (40 CFR 260.10).
- *Hazardous Waste Constituent* - a constituent that caused the hazardous waste to be listed in 40 CFR 261, Subpart D (lists of hazardous wastes from nonspecific and specific sources, and listed hazardous wastes), or a constituent listed in the table of maximum concentrations of contaminants for the toxicity characteristic (40 CFR 260.10).
- *Hazardous Waste Management Unit* - a contiguous area of land on or in which hazardous waste is placed, or the largest area in which there is significant likelihood of mixing hazardous waste constituents in the same area. Examples are a surface impoundment, a waste pile, a treatment area, a landfill cell, an incinerator, a tank and its associated piping and underlying containment system and a container storage area. A container alone does not constitute a unit; the unit includes containers and the land or pad upon which they are placed (40 CFR 260.10).
- *Incinerator* - an enclosed device that (40 CFR 260.10):
  1. uses controlled flame combustion and neither meets the criteria for classification as a boiler, sludge dryer, or carbon regeneration unit, nor is listed as an industrial furnace
  2. meets the definition of infrared incinerator or plasma arc incinerator.
- *Incompatible Waste* - a hazardous waste that is unsuitable for (40 CFR 280.10):
  1. placement in a particular device or facility because it may cause corrosion or decay of containment materials (e.g., container liners or tank walls)
  2. commingling with another waste or material under uncontrolled conditions because the commingling conditions produce heat or pressure, fire or explosion, violent reaction, toxic dusts, mist, fumes or gases, or flammable fumes or gases.

- *Individual Generation Site* - the contiguous site at or on which one or more hazardous waste(s) is generated. An individual generation site, such as a large manufacturing plant, may have one or more sources of hazardous waste, but is considered a single or individual generation site if the site or property is contiguous (40 CFR 260.10).
- *In-Ground Tank* - a device meeting the definition of tank in 40 CFR 260.10 whereby a portion of the tank is situated to any degree within the ground, thereby preventing visual inspection of that external surface area of the tank that is in the ground (40 CFR 260.10).
- *Inner Liner* - a continuous layer of material placed inside a tank or container which protects the construction materials of the tank or container from the contained waste or reagents used to treat the waste (40 CFR 260.10).
- *Land Disposal* - includes, but is not limited to, any placement of hazardous waste in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, underground mine or cave, or placement in a concrete vault or bunker intended for disposal purposes (40 CFR 268.2).
- *Land Treatment Facility* - a facility, or part of a facility, at which hazardous waste is applied onto or incorporated into the soil surface; such facilities are disposal facilities if the waste will remain after closure (40 CFR 260.10).
- *Large Quantity Generator* - see *Generator*.
- *Large Quantity Handler of Universal Waste* - a universal waste handler who accumulates 5000 kg [11,111 lb] or more total of universal waste (batteries, pesticides, or thermostats, calculated collectively) at any time. This designation as a large quantity handler of universal waste is retained through the end of the calendar year in which 5000 kg [11,111 lb] or more total of universal waste is accumulated (40 CFR 273.6).
- *Leak Detection System* - a system capable of detecting the failure of either the primary or secondary containment structure or the presence of a release of hazardous waste or accumulated liquid in the secondary structure. Such a system must employ operational controls (e.g., visual inspections for releases into the secondary containment system of aboveground tanks) or consist of an interstitial monitoring device designed to detect continuously and automatically the failure of the primary or secondary containment structure or the presence of a release of hazardous waste into the secondary containment structure (40 CFR 260.10).
- *Liner* - a continuous layer of natural or manmade materials, beneath or on the sides of a surface impoundment, landfill, or landfill cell, which restricts the downward or lateral escape of hazardous waste, hazardous waste constituents, or leachate (40 CFR 260.10).
- *Management or Hazardous Waste Management* - the systematic control of the collection, source separation, storage, transportation, processing, treatment, recovery, and disposal of hazardous waste (40 CFR 260.10).
- *Management Practice (MP)* - practices which, although not mandated by law, are encouraged to promote safe operating procedures.

- *Manifest* - the shipping document originated and signed by the generator containing the information required by 40 CFR 262, Subpart B (40 CFR 260.10).
- *Manifest Document Number* - the USEPA 12-digit number assigned to the generator plus a unique 5 digit number assigned to the Manifest by the generator for recording and reporting purposes (40 CFR 260.10).
- *Movement* - that hazardous waste transported to a facility in an individual vehicle (40 CFR 260.10).
- *New Tank System or New Component System* - a tank system or component that will be used for the storage and treatment of hazardous waste and for which installation has commenced after 14 July 1986, except however, for purposes of 264.193(g)(2) and 265.193(g)(2), a new tank system is one for which construction commenced after 14 July 1986 (see also existing tank system) (40 CFR 260.10).
- *No Detectable Organic Emissions* - no escape of organics from a device or system to the atmosphere as determined by an instrument reading less than 500 ppmv above the background level at each joint, fitting, and seal when measured in accordance with the requirements of Method 21 in 40 CFR 60, Appendix A, and by no visible openings or defects in the device or system such as rips, tears, or gaps (40 CFR 265.1081).
- *Nonwastewaters* - wastes that do not meet the criteria for wastewaters (40 CFR 268.2).
- *Onground Tank* - a device meeting the definition of tank in 40 CFR 260.10 and that is situated in such a way that the bottom of the tank is on the same level as the adjacent surrounding surface so that the external tank bottom cannot be visibly inspected (40 CFR 260.10).
- *Onsite* - the same or geographically continuous property which may be divided by a public right-of-way, provided the entrance and exit between the properties is at a cross-roads intersection and access is by crossing as opposed to going along the right-of-way (40 CFR 260.10).
- *Open Burning* - the combustion of any material without the following characteristics (40 CFR 260.10):
  1. control of combustion air to maintain adequate temperature for efficient combustion
  2. containment of the combustion-reaction in an enclosed device to provide sufficient residence time and mixing for complete combustion
  3. control of emission of the gaseous combustion products.
- *Partial Closure* - the closure of a hazardous waste management unit in accordance with the applicable closure requirements of 40 CFR 264 and 265 at a facility that contains other active hazardous waste management units. For example, partial closure may include the closure of a tank (including its associated piping and underlying containment systems) while other units of the same facility continue to operate (40 CFR 260.10).
- *Pesticides* - any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant, or desiccant, other than any article that (40 CFR 262.10 and 273.6):

1. is a new animal drug under FFDCA Section 201(w), or
2. is an animal drug that has been determined by regulation of the Secretary of Human Health and Human Services not to be a new animal drug, or
3. is an animal feed under FFDCA section 201(x) that bears or contains any substances described by paragraph 1 or 2 of this definition.

Pesticides which are regulated as universal wastes include recalled pesticides that are (40 CFR 273.3(a):

1. stocks of a suspended and canceled pesticide that are a part of a voluntary or mandatory recall under FIFRA Section 19(b), including, but not limited to, those owned by the registrant responsible for conducting the recall; or
2. stocks of other unused pesticide products that are collected and managed as a part of a waste pesticide collection.

Pesticides which are not universal wastes include (40 CFR 273.3(b):

1. recalled pesticides that are a part of a voluntary or mandatory recall under FIFRA Section 19(b), including, but not limited to, those owned by the registrant responsible for conducting the recall and stocks of other unused pesticide products that are collected and managed as a part of a waste pesticide collections are managed by farmers in compliance with 40 CFR 262.70;
  2. pesticides not meeting the definition of a universal waste
  3. pesticides that are not wastes under Part 261, including those who do not meet the criteria for waste generation or those that are not wastes (see the definition of Waste Pesticide)
  4. pesticides that are not a hazardous waste.
- *Publicly Owned Treatment Works (POTW)* - any device or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature which is owned by a state or municipality (as defined by section 502(4) of the CWA). This definitions includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment (40 CFR 260.10).
  - *Pump Operating Level* - a liquid level proposed by the owner or operator and approved the Regional Administrator based on pump activation level, sump dimensions, and level that avoids backup into the drainage layer and minimizes head in the sump (40 CFR 264.226(d)(3)).
  - *Qualified Groundwater Scientist* - a scientist or engineer who has received a baccalaureate or post-graduate degree in the natural sciences or engineering and has sufficient training and experience in groundwater hydrology and related fields as may be demonstrated by state registration, professional certification, or completion of accredited university courses that enable that individual to make sound professional judgements regarding groundwater monitoring and contaminant fate and transport (40 CFR 260.10).
  - *Representative Sample* - a sample of a universe or whole (e.g., waste pile, lagoon, groundwater) which can be expected to exhibit the average properties of the universe or whole (40 CFR 260.10).
  - *Restricted Wastes* - those categories of hazardous wastes that are prohibited from land disposal either by regulation or by statute, in other words, a hazardous waste that is

restricted no later than the date of the deadline established in RCRA Section 3004 (40 CFR 268).

- *Runoff* - any rainwater, leachate, or other liquid that drains over land from any part of a facility (40 CFR 260.10).
- *Run-on* - any rainwater, leachate, or other liquid that drains over land onto any part of a facility (40 CFR 260.10).
- *Sludge* - any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility exclusive of the treated effluent from a wastewater treatment plant (40 CFR 260.10).
- *Small Quantity Generator* - a generator who generates less than 1000 kg [2204.62 lb] or hazardous waste in a calendar month but more than 100 kg [220.46 lb] (40 CFR 260.10).
- *Small Quantity Handler of Universal Waste* - a universal waste handler who does not accumulate more than 5000 kg (11,111 lb) total of universal waste (batteries, pesticides, thermostats calculated collectively) at any time (40 CFR 273.6).
- *Storage* - the holding of hazardous wastes for a temporary period, at the end of which the hazardous wastes are treated, disposed of, or stored elsewhere (40 CFR 260.10).
- *Sump* - any pit or reservoir that meets the definition of tank and those troughs/trenches connected to it that serve to collect hazardous waste for transport to hazardous waste TSDFs except that as used in the landfill, surface impoundment, and waste pile rules, *sump* means any lined pit or reservoir that serves to collect liquids drained from a leachate collection and removal system or leak detection system for subsequent removal from the system (40 CFR 260.10).
- *Tank* - a stationary device designed to contain an accumulation of hazardous waste that is constructed primarily of nonearthen materials (e.g., wood, concrete, steel, plastic) which provide structural support (40 CFR 260.10).
- *Tank System* - a hazardous waste storage or treatment tank and its associated ancillary equipment and containment system (40 CFR 260.10).
- *Thermostat* - a temperature control device that contains metallic mercury in an ampule attached to a bimetal sensing element, and mercury-containing ampules that have been removed from these temperature control devices in compliance with the requirements of 40 CFR 273.12(c)(2) or 273.33(c)(2) (40 CFR 262.10 and 273.6).

The following are exempted from the definition of thermostat in relation to universal waste (40 CFR 273.4(b)):

1. thermostats that are not yet wastes under 40 CFR part 261 (see the definition of Waste Thermostat);
2. thermostats that are not hazardous waste.

- *Transfer Facility* - any transportation related facility including loading docks, parking areas, storage areas, and other similar areas where shipments of hazardous wastes are held during the normal course of transportation (40 CFR 260.10).
- *Transport Vehicle* - a motor vehicle or rail car used for the transportation of cargo by any mode. Each cargo-carrying body (trailer, railroad freight car, etc.) is a separate transport vehicle (40 CFR 260.10).
- *Transporter* - a person engaged in the offsite transportation of hazardous wastes by air, rail, highway, or water (40 CFR 260.10).
- *Treatability Study* - a study in which a hazardous waste is subjected to a treatment process to determine (40 CFR 260.10):
  1. whether the waste is amenable to the treatment process
  2. what pretreatment (if any) is required
  3. the optimal process conditions needed to achieve the desired treatment
  4. the efficiency of a treatment process for a specific waste or wastes
  5. the characteristics and volumes of residuals from a particular treatment process.

Also included in this definition for the purpose of the 261.4(e) and (f) exemptions are liner compatibility, corrosion, and other material compatibility studies and toxicological and health effects studies. A treatability study is not a means to commercially treat or dispose of hazardous waste.

- *Treatment* - any method, technique, or process, including neutralization, designed to change the physical, chemical or biological character or composition of any hazardous waste so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste nonhazardous, or less hazardous; safer to transport, store, or dispose of; or amenable for recovery, amenable for storage, or reduced in volume (40 CFR 260.10).
- *Underground Tank* - a device meeting the definition of tank in 40 CFR 260.10 whose entire surface area is totally below the surface and covered by the ground (40 CFR 260.10).
- *Unfit-for-Use Tank System* - a tank system that has been determined through an integrity assessment or other inspection to be no longer capable of storing or treating hazardous waste without posing a threat of release of hazardous waste to the environment (40 CFR 260.10).
- *Universal Waste* - any of the following hazardous wastes that are managed under the universal waste requirements of 40 CFR part 273 (40 CFR 262.10 and 273.6):
  1. batteries as described in 40 CFR 273.2 (see definition of battery)
  2. pesticides as described in 40 CFR 273.3 (see definition of pesticides), and
  3. thermostats as described in 273.4 (see definition of thermostats).
- *Universal Waste Handler* - this term means (40 CFR 262.10 and 273.6):
  1. a generator of universal waste, or
  2. the owner or operator of a facility, including all contiguous property, that receives universal waste from other universal waste handlers, accumulates universal waste, and

sends universal waste to another universal waste handler, to a destination facility, or to a foreign destination.

It does not mean:

1. A person who treats (except under the provisions of 40 CFR 273.13(a) or (c), or 273.33(a) or (c), disposes of, or recycles universal waste, or
  2. a person engaged in offsite transportation of an universal waste by air, rail, highway, or water, including a universal waste transfer facility.
- *Universal Waste Transfer Facility* - any transportation related facility including loading docks, parking areas, storage areas, and other similar areas where shipments of universal waste are held during the normal course of transportation for 10 days or less (40 CFR 273.6).
  - *Universal Waste Transporter* - a person engaged in the offsite transportation of universal waste by air, rail, highway, or water (40 CFR 260.10 and 273.6).
  - *Uppermost Aquifer* - the geologic formation nearest the natural ground surface that is an aquifer, as well as lower aquifers that are hydraulically interconnected with this aquifer within the facility's property boundary (40 CFR 260.10).
  - *Volatile Organic (VO) Concentration* - the fraction by weight of organic compounds in a hazardous waste expressed in terms of ppmw as determined by direct measurement using Method 25D or by knowledge of the waste (40 CFR 265.1081).
  - *Waste Battery* - a used battery becomes a waste on the date that it is discarded (e.g. when sent for reclamation). An unused battery becomes a waste on the date the handler decides to discard it. See also the definition of Battery (40 CFR 273.2(c)).
  - *Waste Pesticides* - this term applies as follows (40 CFR 273.3(c):
    1. a recalled pesticides becomes a waste on the first date on which both of the following conditions apply:
      - a. the generator of the recalled pesticide agrees to participate in the recall; and
      - b. the person conducting the recall decides to discard (e.g. burn the pesticides for energy recovery) the pesticides
    2. stocks of unused pesticide products that are collected and managed as part of a waste pesticide collection program becomes a waste on the day the generator decides to discard it.

The following pesticides are not waste (40 CFR 273.3(d):

1. recalled pesticides providing the person conducting the recall:
  - a. has not made a decision to discard (e.g. burn for energy recovery) the pesticide; or
  - b. has made a decision to use a management option that, under 40 CFR 261.2, does not cause the pesticide to be a solid waste (i.e. the selected option is use (other than use constituting disposal), or reuse, or reclamation).
2. unused pesticide products that are collected and managed as a part of a waste pesticide collection program if the generator of the unused pesticide product has not decided to discard (e.g. burn for energy recovery) them.



- *Waste Stabilization Process* - any physical or chemical process used to either reduce the mobility of hazardous constituents in a hazardous waste or eliminate free liquids (40 CFR 265.1081).
- *Waste Thermostats* - A used thermostat becomes a waste on the date is discarded (e.g. sent for reclamation). An unused thermostat becomes a waste on the date the handler decides to discard it (40 CFR 273.4(c)).
- *Wastewater Treatment Unit* - a device that is part of a wastewater treatment facility subject to regulation under section 402 or 307(b) of the CWA and receives and treats or stores an influent wastewater that is a hazardous waste (as defined in 40 CFR 261.3), or that generates and accumulates a wastewater treatment sludge that is a hazardous waste, or treats or stores a wastewater treatment sludge and meets the definition of tank or tank system (40 CFR 260.10).
- *Wastewaters* - wastes that contain less than 1 percent by weight total organic compounds and less than 1 percent by weight total suspended solids (TSS) with certain exceptions (40 CFR 268.2).
- *Zone of Engineering Control* - an area under the control of the owner/operator that upon detection of a hazardous waste release, can be readily cleaned up before the release of hazardous waste or hazardous constituents to groundwater or surface water (40 CFR 260.10).



## HAZARDOUS WASTE MANAGEMENT

### GUIDANCE FOR CHECKLIST USERS

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**HAZARDOUS WASTE MANAGEMENT**  
**GUIDANCE FOR CHECKLIST USERS**

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## HAZARDOUS WASTE MANAGEMENT

### Records To Review

*Generator (including TSDFs if they are also generators)*

- Notification (USEPA identification number)
- Hazardous waste manifests
- Manifest exception reports
- Biennial reports
- Delistings
- Speculative accumulation records
- Land disposal restriction certifications
- Employee training documentation
- Hazardous waste tank integrity assessments
- Contingency plan (large quantity generators only)
- Notifications of hazardous waste oil fuel marketing or blending activity

### Physical Features To Inspect

- Accumulations points
- Vehicles used for transport
- Storage facilities (including drums)



**COMPLIANCE CATEGORY:**  
**HAZARDOUS WASTE MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>ALL FACILITIES</b></p> <p><b>4-1.</b> The current status of any ongoing or unresolved consent orders, compliance agreements, notices of violation (NOVs), inter-agency agreements, or equivalent state enforcement actions is required to be examined (a finding under this checklist item will have the enforcement action/identifying information as the citation).</p> <p><b>4-2.</b> FWS facilities are required to comply with state and local regulations and compliance agreements negotiated with Federal, state, and local governments (EO 12088, Section 1-1; <i>Federal Facilities Compliance Act</i>, Section 102).</p>	<p>Determine if noncompliance issues have been resolved by reviewing a copy of the previous report, consent orders, compliance agreements, NOVs, inter-agency agreements, or equivalent state enforcement actions.</p> <p>Verify that the facility is complying with state and local hazardous waste requirements.</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies where approved.</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- additional manifesting requirements</li> <li>- more frequent reporting requirements</li> <li>- transportation</li> <li>- identification of special waste or waste categories</li> <li>- regulation of specific substances as hazardous waste such as: medical, pathological, and infectious waste; used oil; explosives; used batteries</li> <li>- small and very small quantity generator requirements</li> <li>- RCRA permitting of oil/water separators</li> <li>- disposal requirements</li> <li>- construction and operation of storage and disposal facilities</li> <li>- satellite accumulation point requirements</li> <li>- container marking and labeling requirements.)</li> </ul> <p>Verify that the actions detailed in compliance agreements are being taken according to the schedule established in the agreements.</p>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>4-3.</b> Facilities are required to meet regulatory and FWS requirements issued since the finalization of the handbook (a finding under this checklist item will have the citation of the new regulations as a basis of finding).</p>	<p>Determine if any new regulations concerning hazardous waste have been issued since the finalization of the handbook.</p> <p>Verify that the facility is in compliance with newly issued regulations.</p>
<p><b>4-4.</b> FWS facilities should report all NOV's to the Region and the Service Pollution Control Office (SPCO) (MP).</p>	<p>Determine if the facility has received an NOV relating to hazardous waste.</p> <p>Verify that the NOV was reported to the Region and the SPCO.</p>
<p><b>4-5.</b> Specific persons should be designated responsible for areas where hazardous waste is stored, and the precise nature of their responsibilities should be specified (MP).</p>	<p>Verify that specific individuals have been designated responsible for hazardous waste storage areas.</p> <p>Verify that the individuals designated responsible for hazardous waste storage areas are aware of the precise nature of their responsibilities.</p>
<p><b>4-6.</b> FWS facilities should report spills of hazardous waste to the Region and the SPCO (MP).</p>	<p>Verify that FWS facilities report spills of hazardous waste to the Region and the SPCO.</p> <p>(NOTE: Use the reportable quantity (RQ) as the baseline for reporting, see Appendix 3-1 in Hazardous Materials Management.)</p>



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**ALL SIZES OF  
GENERATORS**

4-7. Facilities that generate solid wastes must determine if the wastes are hazardous wastes (40 CFR 261.3, 261.4 (b), 261.21 through 261.24, and 262.11).

(NOTE: Determination of whether or not a waste is a hazardous waste can be done through one of the following:

- knowledge of all the constituents of the waste (MSDSs) and whether it is listed in 40 CFR 261
- laboratory analysis
- knowledge of processes and/or materials used.)

(NOTE: Unidentified waste materials and spilled hazardous materials may have to be disposed of as hazardous waste depending on their constituents or characteristics.)

(NOTE: Some batteries, pesticides, and thermostats may be considered universal wastes instead of hazardous wastes and need to be handled according to the requirements in 40 CFR 273, see the appropriate definitions for clarification.)

Discuss with staff how wastes generated on the facility were identified and classified.

Determine if the facility followed USEPA criteria for identifying the characteristics of hazardous waste and USEPA's listed wastes in 40 CFR 261 (see Appendices 4-1, 4-2, 4-3, and 4-4).

Determine whether the facility generates, transports, treats, stores, or disposes of any hazardous waste (see Appendices 4-1, 4-2, 4-3, and 4-4 for guidance) and the quantity.

(NOTE: The following solid wastes are not considered to be hazardous wastes:

- household waste
- solid wastes that are generated by any of the following and are returned to the soils as fertilizers:
  - growing and harvesting of agricultural crops
  - raising of animals, including animal manures
  - mining overburden returned to the mine site
- fly ash waste, bottom ash waste, and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels except for facilities that burn hazardous waste
- drilling fluids, produced waters, and other wastes affiliated with the explorations, development, or production of crude oil, natural gas, or geothermal energy

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4-7. (continued)	<ul style="list-style-type: none"> <li>- wastes which fail the test for the toxicity characteristic because chromium is present or are listed in Subpart D because of the presence of chromium, which do not fail the test for toxicity characteristics for any other constituent or are not listed due to the presence of any other constituent, and which do not fail the test for other characteristics (see 40 CFR 261.4(b) for a listing of types of industries generating this type of waste that receive exclusions)</li> <li>- solid waste from the extraction, beneficiation, and processing of ores and minerals (including coal, phosphate rock, and overburden) from the mining of uranium ore. There is an exception to this for facilities that burn or process hazardous waste.</li> <li>- cement kiln dust waste, except for facilities that burn or process hazardous waste</li> <li>- solid waste that consists of discarded arsenic-treated wood or wood products which fail the test for toxicity characteristics for hazardous waste codes D004 through D017 and which is not a hazardous waste for any other reason if the waste is generated by persons who utilize the arsenic-treated wood and wood products for those materials intended end use</li> <li>- petroleum contaminated media and debris that fail the test for toxicity characteristic (Hazardous Waste Codes D018 through D043 only) and are required to meet the corrective action regulations under 40 CFR 280</li> <li>- used chlorofluorocarbon refrigerants from totally enclosed heat transfer equipment, including mobile air-conditioning systems, mobile refrigeration and commercial and industrial air-conditioning and refrigeration systems that use chlorofluorocarbons as the heat transfer fluid in a refrigeration cycle, provided that the refrigerant is reclaimed for further use</li> <li>- non-terne plated used oil filters that are not mixed with a listed hazardous waste if these oil filters have been gravity hot-drained using one of the following methods: <ul style="list-style-type: none"> <li>- puncturing the filter antidrain back valve or the filter dome end and hot-draining</li> <li>- hot-draining and crushing</li> <li>- dismantling and hot-draining</li> <li>- any other equivalent hot-draining method that will remove used oil</li> </ul> </li> <li>- used oil re-refining distillation bottoms that are used as feedstock to manufacture asphalt products.)</li> </ul> <p>Verify that listed wastes are tested for reactivity, corrosivity, ignitability, and toxicity characteristics.</p> <p>Verify that all data used for determination, including quality assurance data, is maintained and kept available for reference or inspection.</p>

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<p><b>4-8.</b> Facilities which claim that a particular material is not a solid waste or is conditionally exempt from regulation as a hazardous waste are required to provide specific documentation (40 CFR 261.2(f)).</p>	<p>Determine if the facility has any wastes that are typically handled as hazardous waste that it claims are exempt.</p> <p>(NOTE: This typically includes items that are recycled such as batteries, waste antifreeze, solvents, and in some states used oil.)</p> <p>Verify that, for these wastes, the facility can demonstrate that there is a known market or disposition for the material and that they meet the terms of the exclusion or exemption.</p> <p>Verify that documentation is provided that indicates the material is not a waste, or is exempt from regulation.</p> <p>(NOTE: One example of documentation are contracts showing that a second person uses the material as an ingredient in a production process.)</p> <p>Verify that, if the facility is claiming to recycle material, the equipment for the recycling is actually at the facility and in working order.</p>
<p><b>4-9.</b> Areas where containers of hazardous waste are stored should have secondary containment (MP).</p>	<p>Verify that the areas where containers of hazardous waste are stored have secondary containment such as a berm, dike, containment pallet, or other facility to prevent leakage to the environment.</p>
<p><b>4-10.</b> FWS facilities should send the Region copies of documentation as to where waste is going (MP).</p>	<p>Verify that the facility send the Region copies of waste destination documentation.</p>



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**CONDITIONALLY  
EXEMPT SMALL  
QUANTITY  
GENERATORS  
(CESQGs)**

**4-11.** Generators of no more than 100 kg/mo [220.46 lb/mo] of hazardous waste may qualify as CESQGs when they meet specific requirements (40 CFR 261.5).

Verify that the following quantity and storage limitations are met:

- no more than 100 kg [220.46 lb] of hazardous waste is generated in a calendar month
- total onsite accumulation does not exceed more than 1000 kg [2204.62 lb] of hazardous waste
- no more than 1 kg [2.2 lb] of acute hazardous waste (see Appendix 4-4) is generated in a calendar month
- no more than a total of 100 kg [220.46 lb] of any residue or contaminated soil, waste, or other debris resulting from the cleanup of any acute wastes in a calendar month is generated.

(NOTE: When making quantity determinations, all hazardous waste generated must be included except hazardous waste that is:

- exempt from regulation under 40 CFR 261.4(c) through (f), 261.6(a)(3), 261.7(a)(1), or 261.8
- managed immediately upon generation only in onsite elementary neutralization units, wastewater treatment units, or totally enclosed treatment facilities
- recycled, without prior storage or accumulation, on in an onsite process
- is used oil managed under 40 CFR 261.6(a)(4) and 40 CFR 279
- universal waste managed under 40 CFR 273.)

Verify that wastes are either treated or disposed of in an onsite facility or delivered to an offsite TSDF, either of which is one of the following:

- permitted
- in interim status
- authorized to manage hazardous waste by a state with an approved hazardous waste management program
- permitted, licensed, or registered by a state to manage municipal or industrial solid waste
- a facility that does one of the following:
  - beneficially uses or reuses, or legitimately recycles or reclaims, its waste
  - treats waste prior to beneficial use or reuse, or legitimate recycling or reclamation
- a universal waste handler or a destination facility for universal waste.

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<p><b>4-11. (continued)</b></p>	<p>(NOTE: A permitted TSF should be permitted to receive hazardous waste from a CESQG)</p> <p>(NOTE: If a hazardous waste generator meets the requirements for being a CESQG, they are not required to meet any of the standards outlined in 40 CFR 262 through 266, (except 262.11), 268, and 270.)</p> <p>(NOTE: If a facility mixes its waste with used oil, the mixture is subject to the requirements in Subpart G, 40 CFR 279, if it is destined to be burned for energy recovery.)</p> <p>(NOTE: Quantities of acute hazardous waste greater than listed amounts are required to be handled according to the standards in 40 CFR 262 through 266, 268, 270, and 124.)</p> <p>(NOTE: Even though a CESQG is not legally required to use a manifest or obtain a hazardous waste identification number, many hazardous waste haulers will not transport hazardous waste from a facility without a manifest or identification number.)</p>
<p><b>4-12. CESQG personnel who handle hazardous waste are required to meet certain training requirements (561 FW 6.9C(3)).</b></p>	<p>Verify that the training program is directed by a person trained in hazardous waste management procedures.</p> <p>Verify that the training program coincides with the hazard communication program and includes the following:</p> <ul style="list-style-type: none"> <li>- response to fire or explosion</li> <li>- response to leaks or spills</li> <li>- waste turn-in procedures</li> <li>- identification of hazardous wastes</li> <li>- container use, marking, labeling, and onsite transportation</li> <li>- manifesting and offsite transportation</li> <li>- personnel health and safety and fire safety</li> <li>- facility shutdown procedures.</li> </ul> <p>Verify that new employee training is completed within 6 mo of employment.</p> <p>Verify that an annual review of initial training is provided.</p> <p>Verify that employees do not work unsupervised until training is completed.</p> <p>Verify specifically that accumulation point managers and hazardous waste handlers have been trained.</p>

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<p><b>4-13.</b> Training records must be maintained for all CESQG staff who manage hazardous waste (MP).</p>	<p>Examine training records and verify they include the following:</p> <ul style="list-style-type: none"> <li>- job title and description for each employee by name</li> <li>- written description of how much training each position will obtain</li> <li>- documentation of training received by name.</li> </ul> <p>Determine if training records are retained for 3 yr after employment at the facility terminates or until closure of the facility.</p>
<p><b>4-14.</b> Empty containers at CESQGs previously holding hazardous wastes must meet the regulatory definition of empty before they are exempted from hazardous waste requirements (40 CFR 261.7).</p>	<p>Verify that, for containers or inner liners holding hazardous wastes, one of the following is done:</p> <ul style="list-style-type: none"> <li>- wastes are removed that can be removed using common practices and no more than 2.5 cm [1 in.] of residue remains.</li> <li>- if the container is less than or equal to 110 gal [416.40 L], no more than 3 percent by weight of total container capacity remains</li> <li>- when the container is greater than 110 gal [416.40 L], no more than 0.3 percent by weight of the total container capacity remains.</li> </ul> <p>Verify that, for containers which hold a compressed gas, the pressure in the container approaches atmosphere.</p> <p>Verify that, for containers or inner liners which held an acute hazardous waste listed in Appendix 4-4, one of the following is done:</p> <ul style="list-style-type: none"> <li>- it is triple rinsed</li> <li>- it is cleaned by another method identified through the literature or testing as achieving equivalent removal</li> <li>- the inner liner is removed.</li> </ul>
<p><b>4-15.</b> Containers used to store hazardous waste at CESQGs must be in good condition and not leaking (561 FW 6.7E(2)(b)(iii)).</p>	<p>Verify that containers are not leaking, bulging, rusting, damaged, or dented.</p> <p>Verify that waste is transferred to a new container or managed in another appropriate manner when necessary.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>4-16.</b> Containers used at CESQGs must be made of or lined with materials compatible with the waste stored in them (561 FW 6.7E(2)(b)(iv)).</p>	<p>Verify that containers are compatible with waste, in particular, check that strong caustics and acids are not stored in metal drums.</p>
<p><b>4-17.</b> Containers of hazardous waste at CESQGs must be closed during storage and handled in a safe manner (561 FW 6.7E((2)(b)(ii) and 6.7E((2)(b)(v)).</p>	<p>Verify that containers are closed, except when it is necessary to add or remove waste (check bungs on drums).</p> <p>Verify that handling and storage practices do not cause damage to the containers or cause them to leak.</p>
<p><b>4-18.</b> Containers of hazardous waste are required to be stored in designated storage areas at CESQGs that meet specific parameters (561 FW 6.7E(2)(c)).</p>	<p>Verify that all hazardous waste containers are identified and stored in appropriate areas.</p> <p>(NOTE: Any unidentified contents of solid waste containers and/or containers not in designated storage areas must be tested to determine if solid or hazardous waste requirements apply.)</p> <p>Verify that the storage area has a portable fire extinguisher and special extinguishing equipment is needed for the waste being stored.</p>
	<p>Verify the following by inspecting storage areas:</p> <ul style="list-style-type: none"> <li>- containers are not stored more than two high and have pallets between them</li> <li>- containers are positioned so that the label is clearly visible at all times</li> <li>- containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system)</li> <li>- at least 3 ft [0.91 m] of aisle space is provided between rows of containers</li> <li>- there is adequate spill control/containment material on hand.</li> </ul>



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<p><b>4-19.</b> Storage areas are required to be inspected periodically (561 FW 6.7E(2)(d)).</p>	<p>Verify that the storage areas are inspected periodically.</p> <p>Verify that inspection logs are maintained by facility personnel.</p> <p>Verify that the inspection includes the following:</p> <ul style="list-style-type: none"> <li>- condition of drums</li> <li>- compatibility/segregation of wastes</li> <li>- required labels</li> <li>- adequate aisle space</li> <li>- proper safety equipment</li> <li>- adequate spill control materials</li> <li>- storage period compliance.</li> </ul>
<p><b>4-20.</b> CESQGs are required to have a contingency plan (561 FW 6.9B(4) and 6.9B(7)).</p>	<p>Verify that the facility has a contingency plan that is specific to the wastes managed at the facility.</p> <p>Verify that the plan includes:</p> <ul style="list-style-type: none"> <li>- a description of actions to be taken during an emergency</li> <li>- a description of arrangements made with local police departments, fire departments, hospitals, contractors, and state and local emergency response teams as appropriate</li> <li>- names, addresses, and phone numbers of all persons qualified to act as emergency coordinators</li> <li>- a list of all emergency equipment at the facility, its location, and what it looks like</li> <li>- an evacuation plan for facility personnel where there is a possibility that an evacuation would be needed.</li> </ul> <p>Verify that the plan is routinely reviewed and updated, especially when emergency coordinators change, the waste being handled changes, and/or the list of emergency equipment changes.</p>
<p><b>4-21.</b> CESQG facilities are required to have an emergency coordinator on call at all times (561 FW 6.9B(6)).</p>	<p>Verify that there is at least one employee at the facility or on call at all times with the responsibility for coordinating all emergency response measure.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>SMALL QUANTITY GENERATORS (SQGs)</b></p> <p><b>General</b></p> <p><b>4-22.</b> Generators of more than 100 kg [220.46 lb] but less than 1000 kg [2204.62 lb] of hazardous waste per month may qualify as an SQG that can accumulate hazardous waste onsite for 180 days without a permit if specific conditions are met (40 CFR 262.34 (d)(1), 262.34(d)(4), 262.34(e), and 262.34 (f)).</p> <p><b>4-23.</b> SQGs that generate, transport, or handle hazardous wastes must obtain a USEPA identification number (40 CFR 262.12(a), 262.1(b), and 265.11).</p>	<p>(NOTE: A SQG generates more than 100 kg [220.46 lb, 26.5 gal] but less than 1000 kg [2204.62 lb, 265 gal] of hazardous waste in any one month of a calendar year.)</p> <p>Inspect containers, storage, and records.</p> <p>Verify that no more than 1000 kg [2204.62 lb] of hazardous waste is generated in any month.</p> <p>Verify that the onsite accumulation time does not exceed 180 days.</p> <p>(NOTE: For an SQG, the accumulation start date begins when the first waste is poured/placed into the waste container, except for at satellite accumulation points.)</p> <p>(NOTE: The 180-day time period is extended to 270 days if the waste must be transported more than 200 mi to a TSDF. This extension does not apply if a TSDF is available within 200 mi and the facility chooses to transport the waste to a farther away TSDF.)</p> <p>Verify that no more than 6000 kg [13,227.73 lb] is allowed to accumulate at the facility.</p> <p>Verify that containers are marked with the date accumulation began and the words HAZARDOUS WASTE.</p> <p>Verify that the containers and the areas at which containers are stored meet the requirements outlined in the subsections pertaining to SQGs.</p> <p>(NOTE: When an SQG exceeds the quantity generation or amount accumulation, it becomes subject to either Generator or TSDF requirements. When an SQG exceeds the storage time limitation, the SQG becomes subject to all storage facility and permitting requirements.)</p> <p>Examine documentation from USEPA for the facility's generator identification number.</p> <p>Verify that, correct identification number is used on all appropriate documentation (i.e., manifests).</p>

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<p><b>4-24.</b> A SQG must not offer its hazardous waste to transporters or to TSDFs that have not received a USEPA identification number (40 CFR 262.12(c)).</p> <p><b>4-25.</b> SQGs of hazardous waste are required to use manifests and keep records of hazardous waste activity (40 CFR 262.20, 262.40(a), 262.40(c), 262.40(d), 262.42(b), 262.43, and 262.44).</p>	<p>Verify that all transporters of hazardous waste of TSDFs have a USEPA identification number by examining records pertaining to disposal contract awards.</p> <p>Verify that signed copies of returned manifests are kept for 3 yr.</p> <p>Verify that exception reports were submitted to the USEPA regional administrator when a signed manifest copy was not received within 60 days of the waste being accepted by the initial transporter.</p> <p>Verify that exception reports are kept for at least 3 yr.</p> <p>Verify that records of test results, waste analyses, and determinations are kept for 3 yr.</p> <p>(NOTE: The requirement to prepare a manifest does not apply if:</p> <ul style="list-style-type: none"> <li>- the waste is reclaimed under contractual agreement and: <ul style="list-style-type: none"> <li>- the type of waste and frequency of shipments are specified in the agreement</li> <li>- the vehicle used to transport the waste to the recycling facility and to deliver regenerated material back to the generator is owned and operated by the reclaimer</li> </ul> </li> <li>- the generator maintains a copy of the reclamation agreement for at least 3 yr after termination of the agreement.)</li> </ul> <p>(NOTE: Period of retention of records is extended automatically during the course of any unresolved enforcement action or as requested by the USEPA administrator.)</p>

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**4-26.** SQGs are required to have an emergency coordinator and emergency response planning (40 CFR 262.34(d)(5)).

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Verify that the facility has an emergency coordinator.

Verify that the following emergency information is posted next to the telephone:

- name and telephone number of emergency coordinator
- location of fire extinguishers and spill control materials
- location of fire alarms (if present)
- telephone number of fire department.

Verify that waste handlers are familiar with waste handling and emergency procedures.



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<p><b>SQGs</b></p> <p><b>Personnel Training</b></p> <p><b>4-27.</b> SQG personnel are required to be thoroughly familiar with proper waste handling and emergency procedures (40 CFR 262.34 (d)(5)(iii)).</p> <p><b>4-28.</b> SQG personnel who handle hazardous waste are required to meet certain training requirements (561 FW 6.9C(3)).</p> <p><b>4-29.</b> Training records should be maintained for all SQG staff who manage hazardous waste (MP).</p>	<p>(NOTE: A SQG generates more than 100 kg [220.46 lb, 26.5 gal] but less than 1000 kg [2204.62 lb, 265 gal] of hazardous waste in any one month of a calendar year.)</p> <p>Verify that personnel are thoroughly familiar with waste handling and emergency procedures relevant to their responsibilities during normal facility operation and emergencies.</p> <p>Verify that the training program is directed by a person trained in hazardous waste management procedures.</p> <p>Verify that the training program coincides with the hazard communication program and includes the following:</p> <ul style="list-style-type: none"> <li>- response to fire or explosion</li> <li>- response to leaks or spills</li> <li>- waste turn-in procedures</li> <li>- identification of hazardous wastes</li> <li>- container use, marking, labeling, and onsite transportation</li> <li>- manifesting and offsite transportation</li> <li>- personnel health and safety and fire safety</li> <li>- facility shutdown procedures.</li> </ul> <p>Verify that new employee training is completed within 6 mo of employment.</p> <p>Verify that an annual review of initial training is provided.</p> <p>Verify that employees do not work unsupervised until training is completed.</p> <p>Verify specifically that accumulation point managers and hazardous waste handlers have been trained.</p> <p>Examine training records and verify that they include the following:</p> <ul style="list-style-type: none"> <li>- job title and description for each employee by name</li> <li>- written description of how much training each position will obtain</li> <li>- documentation of training received by name.</li> </ul> <p>Determine if training records are retained for 3 yr after employment at the facility terminates or until closure of the facility.</p>





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<p><b>SQGs</b></p> <p><b>Containers</b></p> <p><b>4-30.</b> Empty containers at SQGs previously holding hazardous wastes must meet the regulatory definition of empty before they are exempted from hazardous waste requirements (40 CFR 261.7).</p> <p><b>4-31.</b> Containers used to store hazardous waste at SQGs must be in good condition and not leaking (40 CFR 262.34(d)(2) and 265.171).</p> <p><b>4-32.</b> Containers used at SQGs must be made of or lined with materials compatible with the waste stored in them (40 CFR 262.34(d)(2) and 265.172).</p>	<p>(NOTE: A SQG generates more than 100 kg [220.46 lb, 26.5 gal] but less than 1000 kg [2204.62 lb, 265 gal] of hazardous waste in any one month of a calendar year.)</p> <p>Verify that, for containers or inner liners holding hazardous waste, one of the following is done:</p> <ul style="list-style-type: none"> <li>- all wastes are removed that can be removed using common practices and no more than 2.5 cm [1 in.] of residue remains</li> <li>- if the container is less than or equal to 110 gal [416.40 L], no more than 3 percent by weight of total container capacity remains</li> <li>- when the container is greater than 110 gal [416.40 L], no more than 0.3 percent by weight of the total container capacity remains.</li> </ul> <p>Verify that, for containers which held a compressed gas, the pressure in the container approaches atmosphere.</p> <p>Verify that, for containers or inner liners which held an acute hazardous waste listed in Appendix 4-4, one of the following is done:</p> <ul style="list-style-type: none"> <li>- it is triple rinsed</li> <li>- it is cleaned by another method identified through the literature or testing as achieving equivalent removal</li> <li>- the inner liner is removed.</li> </ul> <p>Verify that containers are not leaking, bulging, rusting, damaged, or dented.</p> <p>Verify that waste is transferred to a new container or managed in another appropriate manner when necessary.</p> <p>Verify that containers are compatible with waste, in particular, check that strong caustics and acids are not stored in metal drums.</p>

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<p><b>4-33.</b> Containers of hazardous waste at SQGs must be closed during storage and handled in a safe manner (40 CFR 262.34(d)(2) and 265.173).</p> <p><b>4-34.</b> The handling of incompatible wastes, or incompatible wastes and materials in containers at SQGs, must comply with safe management practices (40 CFR 262.34(d)(2) and 265.177).</p>	<p>Verify that containers are closed, except when it is necessary to add or remove waste (check bungs on drums).</p> <p>Verify that handling and storage practices do not cause damage to the containers or cause them to leak.</p> <p>Verify that incompatible wastes or incompatible wastes and materials are not placed in the same containers unless it is done so that it does not:</p> <ul style="list-style-type: none"> <li>- generate extreme heat or pressure, fire, or explosion, or violent reaction</li> <li>- produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health</li> <li>- produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions</li> <li>- damage the structural integrity of the device or facility</li> <li>- by any other like means threaten human health.</li> </ul> <p>(NOTE: Incompatible wastes as listed in Appendix 4-5 should not be placed in the same drum.)</p> <p>Verify that hazardous wastes are not placed in an unwashed container that previously held an incompatible waste or material.</p> <p>Verify that containers holding hazardous wastes incompatible with wastes stored nearby in other containers, open tanks, piles, or surface impoundments are separated or protected from each other by a dike, berm, wall, or other device.</p>

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**SQGs**

**Satellite  
Accumulation Points**

**4-35.** All SQGs may accumulate as much as 55 gal [208.20 L] of hazardous waste or 1 qt [0.95 L] of acutely hazardous waste in containers at or near any point of initial generation without complying with the requirements for onsite storage if specific standards are met (40 CFR 262.34(c)).

(NOTE: A SQG generates more than 100 kg [220.46 lb, 26.5 gal] but less than 1000 kg [2204.62 lb, 265 gal] of hazardous waste in any one month of a calendar year.)

(NOTE: This type of storage is often referred to as a satellite accumulation point.)

Verify that the satellite accumulation point is at or near the point of generation and is under the control of the operator of the waste generating process.

Verify that the containers are in good condition and are compatible with the waste stored in them and that the containers are kept closed except when waste is being added or removed.

Verify that the containers are marked HAZARDOUS WASTE or other words that identify contents.

(NOTE: See Appendices 4-1, 4-2, 4-3, and 4-4 for guidance on characteristic and listed hazardous wastes.)

Verify that, when waste is accumulated in excess of quantity limitations, the following actions are taken by interviewing the shop managers:

- the excess container is marked with the date the excess amount began accumulating
- the excess waste is transferred to a 180-day or permitted storage area within 3 days.



**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>SQGs</b></p> <p><b>Container Storage Areas</b></p> <p><b>4-36.</b> Containers of hazardous waste are required to be stored in designated storage areas at SQGs that meet specific parameters (561 FW 6.7E(2)(c)).</p> <p><b>4-37.</b> SQG storage areas for hazardous waste must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste (40 CFR 262.34(d)(4) and 265.30 through 265.37).</p>	<p>(NOTE: A SQG generates more than 100 kg [220.46 lb, 26.5 gal] but less than 1000 kg [2204.62 lb, 265 gal] of hazardous waste in any one month of a calendar year.)</p> <p>Verify that all hazardous waste containers are identified and stored in appropriate areas.</p> <p>(NOTE: Any unidentified contents of solid waste containers and/or containers not in designated storage areas must be tested to determine if solid or hazardous waste requirements apply.)</p> <p>Verify that the storage area has a portable fire extinguisher and special extinguishing equipment is needed for the waste being stored.</p> <p>Verify the following by inspecting storage areas:</p> <ul style="list-style-type: none"> <li>- containers are not stored more than two high and have pallets between them</li> <li>- containers are positioned so that the label is clearly visible at all times</li> <li>- containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system)</li> <li>- at least 3 ft [0.91 m] of aisle space is provided between rows of containers</li> <li>- there is adequate spill control/containment material on hand.</li> </ul> <p>Determine if the following required equipment is easily accessible and in working condition by inspecting the SQG storage areas:</p> <ul style="list-style-type: none"> <li>- internal communications or alarm system capable of providing immediate emergency instruction to facility personnel</li> <li>- a telephone or hand-held two-way radio</li> <li>- portable fire extinguishers and special extinguishing equipment (foam, inert gas, or dry chemicals)</li> <li>- spill control equipment</li> <li>- decontamination equipment</li> <li>- fire hydrants or other source of water (reservoir, storage tank, etc.) with adequate volume and pressure, foam producing equipment, automatic sprinklers, or water spray systems.</li> </ul> <p>Determine if equipment is tested and maintained as necessary to ensure proper operation in an emergency.</p> <p>Verify that sufficient aisle space is maintained to allow unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the operation.</p>

**REGULATORY REQUIREMENTS:**

**4-37. (continued)**

Verify that the hospital is familiar with the site and the types of injuries that could result in an emergency as appropriate for the type of waste and potential need for such services.

Verify that inspections are conducted at least weekly to look for leaking containers and signs of deterioration of containers.

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>SQG</b></p> <p><b>Storage Tanks</b></p> <p><b>4-39.</b> SQGs must comply with certain storage tank requirements (40 CFR 262.34(d)(3) and 265.201(a) through 265.201(c)).</p>	<p>(NOTE: A SQG generates more than 100 kg [220.46 lb, 26.5 gal] but less than 1000 kg [2204.62 lb, 265 gal] of hazardous waste in any one month of a calendar year.)</p> <p>Determine if the facility is an SQG that stores or treats wastes in tanks.</p> <p>Verify that:</p> <ul style="list-style-type: none"> <li>- the tank prevents: <ul style="list-style-type: none"> <li>- generation of extreme heat or pressure, fire or explosions, or violent reactions</li> <li>- production of uncontrolled toxic mists, fumes, dusts, or gases in quantities that would threaten human health or the environment</li> <li>- production of uncontrolled flammable fumes or gases in quantities that would pose a risk of fire or explosion</li> <li>- damage to structural integrity of the device or facility</li> <li>- threats to human health or the environment through other means</li> </ul> </li> <li>- no treatment reagent or hazardous wastes are placed in the tank that would cause it to rupture, leak, corrode, or otherwise fail before the end of its intended life</li> <li>- uncovered tanks have at least 60 cm (2 ft) of freeboard unless the tank has a containment structure, drainage control system, or a diversion structure with a volume that equals or exceeds the capacity of the top 60 cm (2 ft) of the tank</li> <li>- continuous feed tanks have a wastefeed cutoff or other stop/bypass system.</li> </ul> <p>Verify that the following are inspected at the indicated times:</p> <ul style="list-style-type: none"> <li>- discharge control equipment at least once each operating day</li> <li>- monitoring equipment (pressure and temperature gauges) at least once each operating day</li> <li>- waste level in tank at least once each operating day</li> <li>- construction material of the tank for corrosion or leakage weekly</li> <li>- surrounding area for leakage and/or contamination at least weekly.</li> </ul>

**COMPLIANCE CATEGORY:**  
**HAZARDOUS WASTE MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>4-40.</b> Tank systems at SQGs must comply with requirements for ignitable, reactive, or incompatible wastes (40 CFR 262.34(d)(3) and 265.201(e) through 265.201(f)).</p>	<p>Verify that ignitable or reactive wastes are not placed in a tank system unless one of the following is done:</p> <ul style="list-style-type: none"> <li>- the waste is treated, rendered, or mixed before or immediately after placement in the tank system so that it is no longer reactive or ignitable and the minimum requirements for reactive and ignitable wastes are met</li> <li>- the waste is treated or stored in such a way that it is protected from any material or conditions that may cause the waste to ignite or react</li> <li>- the tank system is used solely for emergencies.</li> </ul> <p>Verify that the minimum protective distances between waste management areas and any public ways, streets, alleys, or an adjoining property line that can be built upon as required in Tables 2-1 through 2-6 of the National Fire Protection Association's (NFPA'S) <i>Flammable and Combustible Liquids Code</i> are maintained.</p> <p>Verify that incompatible waste, or incompatible wastes and materials, are not placed in the same tank system unless minimum safety requirements are met.</p> <p>Verify that hazardous waste is not placed in a tank system that has not been decontaminated and that previously held an incompatible waste or material unless minimum safety requirements are met.</p>
<p><b>4-41.</b> SQGs must comply with specific tank closure requirements (40 CFR 265.201(d)).</p>	<p>Verify that tank systems in the process of being closed or closed had all hazardous waste removed from tanks, discharge control equipment, and discharge confinement structures.</p>



**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>SQGs</b></p> <p><b>Disposal of Restricted Waste</b></p> <p><b>4-42.</b> SQGs must test their wastes or use process knowledge to determine if they are restricted from land disposal (40 CFR 268.7 (a)).</p> <p><b>4-43.</b> When an SQG is managing a restricted waste a notice must be issued to the TSDf in writing of the appropriate treatment standards and prohibition levels (40 CFR 268.7(a)(1) through 268.7(a)(3) and 268.7 (a) (10)).</p>	<p>(NOTE: See Appendix 4-6 for a summary of recordkeeping and notification requirements.)</p> <p>(NOTE: A SQG generates more than 100 kg [220.46 lb, 26.5 gal] but less than 1000 kg [2204.62 lb, 265 gal] of hazardous waste in any one month of a calendar year.)</p> <p>Determine whether the generator tests for restricted wastes.</p> <p>Determine if the facility generates land disposal restricted wastes by reviewing test results (see Appendix 4-7).</p> <p>Verify that, for restricted waste which does not meet the applicable treatment standards or exceeds the applicable prohibition levels, the notice is issued and includes:</p> <ul style="list-style-type: none"> <li>- the USEPA hazardous waste number</li> <li>- waste constituents that the treater will monitor, if monitoring will not include all regulated constituents, for wastes F001 - F005, F039, D001, D002, and D012 - D043</li> <li>- whether the waste is a nonwastewater or wastewater</li> <li>- the subcategory of the waste</li> <li>- for hazardous debris, the contaminants subject to treatment, and indication that the contaminants are being treated plus: <ul style="list-style-type: none"> <li>- the USEPA hazardous waste number</li> <li>- waste constituents that the treater will monitor, if monitoring will not include all regulated constituents, for wastes F001 - F005, F039, D001, D002, and D012 - D043</li> <li>- whether the waste is a nonwastewater or wastewater</li> <li>- the subcategory of the waste.</li> </ul> </li> </ul>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
4-43. (continued)	<p>Verify that, for restricted waste which can be land disposed without further treatment (this does not include debris that does not contain hazardous waste), the notice includes:</p> <ul style="list-style-type: none"> <li>- the USEPA hazardous waste number</li> <li>- waste constituents that the treater will monitor, if monitoring will not include all regulated constituents, for wastes F00 -F005, F039, D001, D002, and D012-D043</li> <li>- whether the waste is a nonwastewater or wastewater</li> <li>- the subcategory of the waste</li> <li>- the manifest number associated with the shipment</li> <li>- the waste analysis data, when available</li> <li>- the signature of an authorized representative certifying that the waste complies with the treatment standards of 40 CFR 268.</li> </ul> <p>Verify that, for restricted waste which is subject to an exemption from a prohibition of the type of land disposal used, the notice states that the waste is not prohibited from land disposal and includes:</p> <ul style="list-style-type: none"> <li>- the USEPA hazardous waste number</li> <li>- waste constituents that the treater will monitor, if monitoring will not include all regulated constituents, for wastes F00 -F005, F039, D001, D002, and D012-D043</li> <li>- whether the waste is a nonwastewater or wastewater</li> <li>- the subcategory of the waste</li> <li>- the manifest number associated with the shipment</li> <li>- the waste analysis data, when available</li> <li>- for hazardous debris, the contaminants subject to treatment, and indication that the contaminants are being treated plus: <ul style="list-style-type: none"> <li>- the USEPA hazardous waste number</li> <li>- waste constituents that the treater will monitor, if monitoring will not include all regulated constituents, for wastes F001-F005, F039, D001, D002, and D012-D043</li> <li>- whether the waste is a nonwastewater or wastewater</li> <li>- the subcategory of the waste.</li> </ul> </li> </ul> <p>(NOTE: SQGs with tolling agreements are required to comply with notification and certification requirements for the initial shipment of waste subject to the agreement. The SQG will retain an onsite copy of the notification and certification along with the tolling agreement for at least 3 yr after the termination or expiration of the agreement.)</p>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:  
July 1995**

**4-44.** SQGs that are managing hazardous wastes in tanks, containers, or containment buildings and treating the waste to meet applicable treatment standards must develop and follow a written waste analysis plan (40 CFR 268.7(a)(4) and 268.7(a)(10)).

Verify that the plan describes the procedures the generator will carry out to comply with treatment standards.

(NOTE: SQGs treating hazardous debris under the alternative treatment standards in Table 1 of 40 CFR 268.7(a)(4) are not required to conduct waste analysis.)

Verify that the plan is kept onsite and:

- the plan is based on a detailed chemical and physical analysis of representative sample of the prohibited waste being treated
- contains all information necessary to treat the wastes in accordance with regulatory requirements, including the selected testing frequency
- the plan is filed with the USEPA regional administrator or state authorized official at least 30 days prior to the treatment activity, with delivery verified.

(NOTE: SQGs with tolling agreements are required to comply with notification and certification requirements for the initial shipment of waste subject to the agreement. The SQG will retain an onsite copy of the notification and certification along with the tolling agreement for at least 3 yr after the termination or expiration of the agreement.)

**4-45.** SQGs are required to keep specific documents pertaining to restricted wastes onsite (40 CFR 268.7(a)(5) through 268.7(a)(7) and 268.7(a)(10)).

Verify that, if the facility is using generator knowledge to determine whether a waste meets land disposal restriction requirements, the supporting data used in making this determination is retained onsite in the facility operating files.

Verify that, if the facility has determined whether a waste is restricted using appropriate test methods, the waste analysis data is retained onsite in the files.

Verify that, if the facility has determined it is managing a restricted waste which is excluded from the definition of a hazardous waste or solid waste or exempt from RCRA Subtitle C, a one-time notice is placed in the facilities files stating that the generated waste is excluded.

Verify that a copy of all notices, certifications, demonstrations, waste analysis data, and other documentation is kept for at least 5 yr from the date the waste was last sent to onsite or offsite treatment, storage, or disposal.

Verify that SQGs with a tolling agreement retain the agreement and copies of notification and certification for at least 3 yr after the agreement expires.

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:  
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**4-46.** The storage of hazardous waste that is restricted from land disposal is not allowed unless specific conditions are met (40 CFR 268.50).

Verify that land disposal restricted waste is not stored at the facility unless the SQG is storing the wastes in tanks, containers, or containment buildings onsite only for the purpose of accumulating enough quantity of hazardous waste to facilitate proper recovery, treatment, or disposal and all appropriate standards for containers, tanks, and containment buildings are met.

Verify that transporters do not store manifested shipments of land disposal restricted wastes for more than 10 days.

(NOTE: The prohibition on storage does not apply to hazardous wastes that have met treatment standards.)

Verify that liquid hazardous wastes containing PCBs at concentrations greater than 50 ppm are stored at a site that meets the requirements of 40 CFR 761.65(b) (see the section titled Special Pollutants Management) and is removed from storage within 1 yr of the date it was first placed into storage.

**COMPLIANCE CATEGORY:**  
**HAZARDOUS WASTE MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>GENERATORS</b></p> <p><b>General</b></p> <p>4-47. Generators may accumulate hazardous waste onsite for 90 days or less without a permit or interim status provided they meet certain conditions (40 CFR 262.34(a)(2), 262.34(a)(3), and 262.34(b)).</p> <p>4-48. A generator that generates, transports, or handles hazardous wastes must obtain a USEPA identification number (40 CFR 262.12(a), 262.12(b), 264.11, and 265.11).</p> <p>4-49. Generators must not offer their waste to transporters or TSDFs that have not received a USEPA identification number (40 CFR 262.12(c)).</p>	<p>(NOTE: A Generator generates more than 1000 kg [2204.62 lb, 265 gal] of hazardous waste in any one month of a calendar year.)</p> <p>Inspect each accumulation point and interview the accumulation point manager. Verify that:</p> <ul style="list-style-type: none"> <li>- the recorded start date indicates no container or tank has been accumulating a hazardous waste longer than 90 days (unless granted a 30-day extension)</li> <li>- each container and tank is labeled or marked clearly with the words HAZARDOUS WASTE or other appropriate words clearly indicating the contents</li> <li>- the accumulation start date.</li> </ul> <p>(NOTE: For a generator, the accumulation start date begins when the first waste is poured/placed into the waste container, except for at satellite accumulation points.)</p> <p>(NOTE: A generator who meets these standards is exempt from meeting the closure requirements outlined in 40 CFR 265.110 through 265.156, except for 265.111 and 265.114.)</p> <p>(NOTE: A generator who accumulates hazardous waste for more than 90 days (without an extension) is subject to all TSDF and permitting requirements.)</p> <p>Examine documentation from USEPA for the facility's generator identification number.</p> <p>Verify that the correct identification number is used on all appropriate documentation (i.e., manifests).</p> <p>Verify that all transporters of hazardous wastes or TSDFs used by the generator have a USEPA identification number by examining records pertaining to disposal contract awards.</p>

**COMPLIANCE CATEGORY:**  
**HAZARDOUS WASTE MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>4-50.</b> Generators of hazardous waste must submit a biennial report to the regional administrator by 1 March of even numbered years (40 CFR 262.40(b) and 262.41 (a)).</p>	<p>Verify that the biennial report (USEPA Form 8700-13A) is complete and was submitted in a timely manner.</p> <p>Verify that copies are kept for 3 yr.</p> <p>(NOTE: Reporting for exports of hazardous waste is not required.)</p> <p>(NOTE: This may not apply if an annual report was submitted to the state depending on the state requirements.)</p> <p>(NOTE: Periods of retention of records may be extended automatically during the course of any unresolved enforcement action or at the request of the USEPA administrator.)</p>
<p><b>4-51.</b> Generators are required to use manifests, file manifest exception reports, and maintain records (40 CFR 262.40(b), 262.40 (d), and 262.42(a)).</p>	<p>Verify that manifests are used when shipping the waste offsite.</p> <p>Verify that exception reports are filed with the USEPA regional administrator if a copy of the manifest is not received within 45 days after the waste is accepted by the initial transporter.</p> <p>Verify that manifests and exception reports are kept for 3 yr.</p> <p>(NOTE: Periods of retention for records may be extended automatically during the course of any unresolved enforcement action or at the request of the USEPA administrator.)</p>
<p><b>4-52.</b> Generators are required to keep records of waste analyses, tests, and waste determinations (40 CFR 262.40(c)).</p>	<p>Verify that the appropriate records are kept for 3 yr from the date the waste was last sent to the onsite or offsite TSDF.</p> <p>(NOTE: Periods of retention for reports may be extended automatically during the course of any unresolved enforcement action or at the request of the USEPA administrator.)</p>

**COMPLIANCE CATEGORY:**  
**HAZARDOUS WASTE MANAGEMENT**  
**Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**4-53.** Generator storage areas must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste (40 CFR 262.34(a)(4) and 265.30 through 265.37).

**REVIEWER CHECKS:**  
**July 1995**

Determine if the following required equipment is easily accessible and in working condition at the storage area:

- internal communications or alarm system capable of providing immediate emergency instruction to facility personnel
- a telephone or hand-held two-way radio
- portable fire extinguishers and special extinguishing equipment (foam, inert gas, or dry chemicals)
- spill control equipment
- decontamination equipment
- fire hydrants or other source of water (reservoir, storage tank, etc.) with adequate volume and pressure, foam producing equipment, automatic sprinklers, or water spray systems.

Determine if equipment is tested and maintained as necessary to ensure proper operation in an emergency.

Verify that sufficient aisle space is maintained to allow unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the operation.

Verify that police, fire department, and emergency response teams are familiar with the layout of the facility, properties of the waste being handled, and general operations as appropriate for the type of waste and potential need for such services.

Verify that the hospital is familiar with the site and the types of injuries that could result in an emergency as appropriate for the type of waste and potential need for such services.





COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS: July 1995
<b>GENERATORS</b>	(NOTE: A Generator generates more than 1000 kg [2204.62 lb, 265 gal] of hazardous waste in any one month of a calendar year.)
<b>Personnel Training</b>	
<b>4-54.</b> All facility personnel who handle hazardous waste must meet certain training requirements (40 CFR 262.34(a)(4) and 265.16(a) through 265.16 (c)).	<p>Verify that the training program is directed by a person trained in hazardous waste management procedures.</p> <p>Verify that the training program includes the following:</p> <ul style="list-style-type: none"> <li>- contingency plan implementation (emergency procedures, equipment, and systems)</li> <li>- key parameters for automatic waste feed cut-off system</li> <li>- procedures for using, inspecting, and repairing emergency and monitoring equipment</li> <li>- operation of communications and alarm systems</li> <li>- response to fire or explosion</li> <li>- response to groundwater contamination incidents.</li> </ul> <p>Verify that new employee training is completed within 6 mo of employment/assignment.</p> <p>Verify that an annual review of initial training is provided.</p> <p>Verify that employees do not work unsupervised until training is completed.</p> <p>Verify specifically that accumulation point managers and hazardous waste handlers have been trained.</p>
<b>4-55.</b> Training records must be maintained for all facility staff who manage hazardous waste (40 CFR 262.34(a)(4), 265.16 (d), and 265.16 (e)).	<p>Verify that training records include the following:</p> <ul style="list-style-type: none"> <li>- job title and description for each employee by name</li> <li>- written description of how much training each position will obtain</li> <li>- documentation of training received by name.</li> </ul> <p>Determine if training records are retained for 3 yr after employment at the facility terminates or until the closure of the site.</p>



<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS WASTE MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<b>GENERATORS</b>  <b>Contingency Plans and Emergency Coordinators</b>  <b>4-56.</b> Generators must have a contingency plan (40 CFR 262.34(a)(4) and 265.50 through 265.54).	<p>(NOTE: A Generator generates more than 1000 kg [2204.62 lb, 265 gal] of hazardous waste in any one month of a calendar year.)</p> <p>(NOTE: Generating activities may be addressed in the facility's Spill Prevention, Control, and Countermeasure (SPCC) plan or other emergency plan; or, if none exists, in a separate contingency plan.)</p> <p>Verify that the contingency plan is designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or nonsudden release of hazardous waste or hazardous waste constituents.</p> <p>Verify that the plan includes the following:</p> <ul style="list-style-type: none"> <li>- a description of actions to be taken during an emergency</li> <li>- a description of arrangements made with local police departments, fire departments, hospitals, contractors, and state and local emergency response teams as appropriate</li> <li>- names, addresses, and phone numbers of all persons qualified to act as emergency coordinator</li> <li>- a list of all emergency equipment at the facility and where this equipment is required, located, and what it looks like</li> <li>- an evacuation plan for facility personnel where there is a possibility evacuation would be needed.</li> </ul> <p>Verify that copies of the contingency plan are maintained at the generation sites and storage areas and also have been submitted to organizations which may be called upon to provide emergency services.</p> <p>Verify that the contingency plan is routinely reviewed and updated, especially when the facility is issued a new permit, the plan fails in an emergency, the emergency coordinators change, the waste being handled changes, and/or the list of emergency equipment changes.</p>
<b>4-57.</b> Each generator must have an emergency coordinator on the facility premises or on call at all times (40 CFR 262.34(a)(4) and 265.55).	<p>Verify that, at all times, there is at least one employee at the facility or on call, with responsibility for coordinating all emergency response measures.</p> <p>Verify that the emergency coordinator is thoroughly familiar with the facility, the characteristics of the waste handled, and the provisions of the contingency plan. In addition, verify that the emergency coordinator has the authority to commit the resources needed to carry out the contingency plan.</p>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>4-58.</b> Emergency coordinators at generators must follow certain emergency procedures whenever there is an imminent or actual emergency situation (40 CFR 262.34(a)(4) and 265.56(a) through 265.56(i)).</p>	<p>Verify that the emergency coordinator is required to follow these emergency procedures:</p> <ul style="list-style-type: none"> <li>- immediately activate facility alarms or communication systems and notify appropriate base, state, and local response parties</li> <li>- identify the character, exact source, amount, and a real extent of any released materials</li> <li>- assess possible hazards to human health or the environment, including direct and indirect effects (e.g., release of gases, surface runoff from water, or chemicals used to control fire or explosions, etc.)</li> <li>- stop processes and operations at the facility when necessary to prevent fires, explosions, or further releases</li> <li>- collect and contain the released waste</li> <li>- remove or isolate containers when necessary</li> <li>- monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment whenever appropriate</li> <li>- provide for treatment, storage, or disposal of recovered waste, contaminated soil, surface water, or other material</li> <li>- ensure that no waste which may be incompatible with the released material is treated, stored, or disposed of until cleanup is completed</li> <li>- ensure that all emergency equipment is cleaned and fit for its intended use before operations are resumed</li> <li>- notify the USEPA and appropriate state and local authorities that the facility is in compliance before operations resume.</li> </ul>
<p><b>4-59.</b> Operators must record the time, date, and details of any incident that requires implementing the contingency plan (40 CFR 262.34(a)(4) and 265.56(j)).</p>	<p>Determine if incidents have been recorded and corrective actions taken through a review of the facility operating records.</p> <p>Verify that written reports have been submitted to the USEPA regional administrator within 15 days after the incident.</p>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>GENERATORS</b></p> <p><b>Containers</b></p> <p><b>4-60.</b> Empty containers at generators previously holding hazardous wastes must meet the regulatory definition of empty before they are exempted from hazardous waste requirements (40 CFR 261.7).</p> <p><b>4-61.</b> Containers used to store hazardous waste at generators must be in good condition and not leaking (40 CFR 262.34(a)(1)(i) and 265.171).</p>	<p>(NOTE: See Appendix 4-8 for guidance on the schedule for implementation of air emissions standards in 40 CFR 265.1080 through 265.1091. Also in relation to the requirements for air emissions standard, see the definition of Exempted Waste Management Units.)</p> <p>(NOTE: A Generator generates more than 1000 kg [2204.62 lb, 265 gal] of hazardous waste in any one month of a calendar year.)</p> <p>Verify that, for containers or inner liners holding hazardous wastes one of the following is met:</p> <ul style="list-style-type: none"> <li>- wastes are removed that can be removed using common practices and no more than 2.5 cm [1 in.] of residue remains</li> <li>- if the container is less than or equal to 110 gal [416.40 L], no more than 3 percent by weight of total container capacity remains</li> <li>- when the container is greater than 110 gal [416.40 L], no more than 0.3 percent by weight of the total container capacity remains.</li> </ul> <p>Verify that, for containers which held a compressed gas, the pressure in the container approaches atmospheric.</p> <p>(NOTE: Some states require a treatment permit when returning compressed gas cylinders and aerosol cans to atmospheric.)</p> <p>Verify that, for containers or inner liners which held an acute hazardous waste listed in Appendix 4-4 that one of the following is done:</p> <ul style="list-style-type: none"> <li>- it is triple rinsed</li> <li>- it is cleaned by another method identified through the literature or testing as achieving equivalent removal</li> <li>- the inner liner is removed.</li> </ul> <p>Verify that the rinsate has been disposed of as necessary according to its properties.</p> <p>Verify that containers are not leaking, bulging, rusting, damaged, or dented.</p> <p>Verify that waste is transferred to a new container or managed in another appropriate manner when necessary.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>4-62.</b> Containers used at generators must be made of or lined with materials compatible with the waste stored in them (40 CFR 262.34(a)(1)(i) and 265.172).</p> <p><b>4-63.</b> Containers at generators must be closed during storage and handled in a safe manner (40 CFR 262.34(a)(1)(i) and 265.173).</p> <p><b>4-64.</b> The handling of incompatible wastes, or incompatible wastes and materials in containers at generators, must comply with safe management practices (40 CFR 262.34(a)(1)(i) and 265.177).</p>	<p>Verify that containers are compatible with waste, in particular, check that strong caustics and acids are not stored in metal drums.</p> <p>Verify that containers are closed, except when it is necessary to add or remove waste (check bungs on drums, look for funnels).</p> <p>Verify that handling and storage practices do not cause damage to the containers or cause them to leak.</p> <p>Verify that incompatible wastes or incompatible wastes and materials are not placed in the same containers unless it is done so that it does not:</p> <ul style="list-style-type: none"> <li>- generate extreme heat or pressure, fire, or explosion, or violent reaction</li> <li>- produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health</li> <li>- produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions</li> <li>- damage the structural integrity of the device or facility</li> <li>- by any other like means threaten human health or the environment.</li> </ul> <p>(NOTE: Incompatible wastes as listed in Appendix 4-5 should not be placed in the same drum.)</p> <p>Verify that hazardous wastes are not placed in an unwashed container that previously held an incompatible waste or material.</p> <p>Verify that containers holding hazardous wastes incompatible with wastes stored nearby in other containers, open tanks, piles, or surface impoundments are separated or protected from each other by a dike, berm, wall, or other device.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>4-65.</b> Containers with design capacities greater than 0.1 m<sup>3</sup> [26.4 gal] into which hazardous waste is placed are required to meet specific design and operating standards (40 CFR 262.34 (a)(1)(i), 265.1087(a) through 265.1087 (b)(2)).</p>	<p>(NOTE: The requirements of 40 CFR 265.1087 do not apply to containers in which all the hazardous waste entering the container meets either of the following:</p> <ul style="list-style-type: none"> <li>- the average VO concentration of the hazardous waste at the point of waste origination is less than 100 ppmw</li> <li>- the organic content of the hazardous waste has been reduced by an organic destruction or removal process</li> </ul> <p>(NOTE: These requirements do not apply to a container that has a design capacity less than or equal to 0.1 m<sup>3</sup> [26.4 gal] (40 CFR 265.1080(b)(2)).</p> <p>Verify that hazardous waste is placed into one of the following containers unless it is used for treatment:</p> <ul style="list-style-type: none"> <li>- a container that is equipped with a cover which operates with no detectable organic emissions when all container openings (i.e. bungs, lids, hatches, and sampling ports) are secured in a closed, sealed position</li> <li>- a container having a design capacity less than or equal to 0.46 m<sup>3</sup> [121.4 gal] that is equipped with a cover and complies with all applicable DOT regulations for packaging for transport</li> <li>- a container that is attached to or forms a part of any truck, trailer, or rail-car and that has been demonstrated within the preceding 12 mo to be vapor tight.</li> </ul> <p>Verify that, if the facility uses a container that is equipped with a cover which operates with no detectable organic emissions when all container openings are secured in a closed, sealed position, the openings are tested to determine if the container operates with no detectable leaks the first time any portion of the hazardous waste is placed in the container.</p> <p>(NOTE: This check is not required for a DOT approved container.)</p> <p>Verify that the container is not used if a leak is detected.</p>

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**4-65. (continued)**

Verify that, if the facility is treating hazardous waste in a container by either a waste stabilization process, any process that requires the addition of heat to the waste, or any process that produces an exothermic reaction, the following requirements are met:

- the container is kept in an enclosure that is vented through a closed vent system to a control device whenever it is necessary for the container to be opened
- the enclosure is designed and opened so that:
  - there is sufficient airflow into the structure to capture the organic vapors emitted from the hazardous waste in the container and vent the vapors through the closed vent system to the control device
  - the pressure drop across each opening in the enclosure is maintained at a pressure below the atmospheric pressure such that whenever an open container is placed inside the enclosure no organic vapors released from the container exit the enclosure through the opening
  - there is an appropriately designed closed vent system and control device.

**4-66.** The transfer of hazardous waste into containers having a design capacity greater than 0.46 m<sup>3</sup> [121.4 gal] is required to be done according to specific procedures (40 CFR 262.34(a)(1)(i) 265.108(b)(3)).

Verify that, when transfer is done by pumping the following are met:

- a conveyance system with a tube (e.g., pipe, hose) to add the waste into the container is used
- during transfer the cover remains in place
- all container openings are maintained in a closed sealed position except for those through which the tube enters
- the tube is positioned so that either the:
  - tube outlet continuously remains submerged below the waste surface at all time the waste is flowing through the tube
  - lower bottom edge of the tube outlet is located at a distance no greater than two inside diameters of the tube or 15.25 cm [6 in.], whichever is greater, from the bottom of the container at all times waste is flowing through the tube
  - tube is connected to a permanent port mounted on the bottom of the container so that the lower edge of the port opening inside the container is located at a distance equal to or less than 15.25 cm [6 in.] from the container bottom.

Verify that when transfer occurs by means other than pumping it is done so that the cover remains in place and all container openings are maintained in a closed, sealed position, except for those through which the waste is added.



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<p><b>4-67.</b> Container openings and safety devices are required to meet specific design standards (40 CFR 262.34(a)(1)(i) and 265.1087(c) through 265.1087(d)).</p>	<p>(NOTE: These requirements do not apply to a container that has a design capacity less than or equal to 0.1 m<sup>3</sup> [26.4 gal] (40 CFR 265.1080(b)(2)).</p> <p>Verify that each container opening is maintained in a closed, sealed position (e.g., covered by a gasketed lid) at all times that hazardous waste is in the container except when it is necessary to open the container to do any of the following:</p> <ul style="list-style-type: none"> <li>- add, remove, inspect, or sample the material in the container</li> <li>- inspect, maintain, repair, or replace equipment located inside the container</li> <li>- vent gases or vapors from a cover located over or enclosing an open container in a closed-vent system conducted to an appropriate control device.</li> </ul> <p>Verify that, when safety devices that vent directly to the atmosphere are used on the container, cover, enclosure, closed vent system, or control device, the following conditions are met:</p> <ul style="list-style-type: none"> <li>- the safety device is not used for planned or routine venting of organic vapors</li> <li>- the safety device remains in a closed, sealed position at all times except when an unplanned event requires that it be opened to prevent physical damage or permanent deformation.</li> </ul>
<p><b>4-68.</b> Facilities are required to meet inspection and monitoring requirements for containers (40 CFR 262.34(a)(1)(i) and 265.1089).</p>	<p>(NOTE: These requirements do not apply to a container that has a design capacity less than or equal to 0.1 m<sup>3</sup> [26.4 gal] (40 CFR 265.1080(b)(2)).</p> <p>Verify that the facility has a written plan and schedule for performing inspections and monitoring.</p> <p>Verify that covers are visually inspected and monitored for detectable emissions except as follows:</p> <ul style="list-style-type: none"> <li>- containers that meet all the requirements in 265.1087(b)(1)(ii) or 265.1087(b)(1)(iii) (see checklist items 4-65)</li> <li>- enclosures used to control air emissions from containers.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>4-68. (continued)</b></p>	<p>Verify that covers and all cover openings are inspected and monitored as follows:</p> <ul style="list-style-type: none"> <li>- visually inspected initially and monitored for detectable organic emissions on or before the date that the container using the cover has to comply with these requirement</li> <li>- visually every 6 mo after the initial inspection except for the following: <ul style="list-style-type: none"> <li>- a cover opening that is designated as unsafe to inspect and monitor</li> <li>- a cover opening on a cover installed and placed in operation before 6 December 1994 that is designated as difficult to monitor and inspect.</li> </ul> </li> </ul> <p>Verify that, when a leak is detected, the first attempt at repair is no later than 5 calendar days after detection and repair is completed no later than 15 calendar days after detection.</p> <p>(NOTE: If a repair cannot be completed within 15 days then no more hazardous waste is to be added to the container until the repair is complete.)</p>
<p><b>4-69.</b> Facilities are required to meet documentation requirements for containers (40 CFR 262.34(a)(1)(i) and 265.1090).</p>	<p>(NOTE: These requirements do not apply to a container that has a design capacity less than or equal to 0.1 m<sup>3</sup> [26.4 gal] (40 CFR 265.1080(b)(2)).</p> <p>Verify that the facility records and maintains the following:</p> <ul style="list-style-type: none"> <li>- information for each enclosure used to control air emissions from containers describing the design and certifications that it meets regulatory specifications</li> <li>- records for all Method 27 tests performed on containers</li> <li>- records for all visual inspections</li> <li>- records for all monitoring for detectable organic emissions</li> <li>- records of the date of each attempt to repair a leak, repair methods applied, and the date of successful repair</li> <li>- records for all continuous emissions monitoring.</li> </ul> <p>Verify that, when air emissions controls are not used on a container, waste determination information is recorded in the facility log.</p>

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4-69. (continued)	<p>Verify that, if the facility uses either of the following, the identification number of the incinerator, boiler, or industrial furnace is recorded.</p> <ul style="list-style-type: none"> <li>- a process that removes or destroys the organics contained in the hazardous waste and meets all the following conditions: <ul style="list-style-type: none"> <li>- all the materials entering the process are hazardous wastes</li> <li>- from the point of waste origination through the point where the hazardous waste enters the process, the hazardous waste is continuously managed in waste management units which use air emissions controls as applicable to the waste management unit</li> <li>- the average VO concentration of the hazardous waste at the point of waste treatment is less than the lowest average VO concentration at the point of waste origination determined for each of the individual hazardous waste streams entering the process or 100 ppmw, whichever value is lower</li> </ul> </li> <li>- a hazardous waste incinerator for which the owner/operator has either been issued a final permit or has certified compliance.</li> </ul> <p>Verify that the covers which are designated as unsafe to monitor are listed in a log and an explanation of why they are unsafe to inspect and monitor and a plan and schedule of inspection and monitoring.</p> <p>Verify that all records, except design information records are kept for a minimum of 3 yr.</p> <p>Verify that design information records are kept for the life of the equipment.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>GENERATORS</b></p> <p><b>Satellite Accumulation Points</b></p> <p><b>4-70.</b> Generators may accumulate as much as 55 gal [208.20 L] of hazardous waste or 1 qt [0.95 L] of acutely hazardous waste in containers at or near any point of initial generation without complying with the requirements for onsite storage if specific standards are met (40 CFR 262.34(c)).</p>	<p>(NOTE: A Generator generates more than 1000 kg [2204.62 lb, 265 gal] of hazardous waste in any one month of a calendar year.)</p> <p>(NOTE: This type of storage is often referred to as a satellite accumulation point.)</p> <p>Verify that the satellite accumulation point is at or near the point of generation and is under the control of the operator of the waste generating process.</p> <p>Verify that the containers are in good condition and are compatible with the waste stored in them, and that the containers are kept closed except when waste is being added or removed.</p> <p>Verify that the containers are marked HAZARDOUS WASTE or other words that identify the contents.</p> <p>(NOTE: See Appendices 4-1, 4-2, 4-3, and 4-4 for guidance on characteristic and listed hazardous wastes.)</p> <p>Verify that, when waste is accumulated in excess of quantity limitations, the following actions are taken:</p> <ul style="list-style-type: none"> <li>- the excess container is marked with the date the excess amount began accumulating</li> <li>- the excess waste is transferred to a 90-day or permitted storage area within 3 days.</li> </ul>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>GENERATORS</b></p> <p><b>Container Storage Areas</b></p> <p><b>4-71.</b> Containers of hazardous waste are required to be stored in designated storage areas at Generators that meet specific parameters (561 FW 6.7E(2)(c)).</p> <p><b>4-72.</b> Containers holding ignitable or reactive waste must be located 15 m (50 ft) from the property line of the facility (40 CFR 262.34 (a)(1)(i) and 265.176).</p> <p><b>4-73.</b> Generator personnel must conduct weekly inspections of container storage areas (40 CFR 262.34(a)(1)(i) and 265.174).</p>	<p>(NOTE: A Generator generates more than 1000 kg [2204.62 lb, 265 gal] of hazardous waste in any one month of a calendar year.)</p> <p>Verify that all hazardous waste containers are identified and stored in appropriate areas.</p> <p>(NOTE: Any unidentified contents of solid waste containers and/or containers not in designated storage areas must be tested to determine if solid or hazardous waste requirements apply.)</p> <p>Verify that the storage area has a portable fire extinguisher and special extinguishing equipment is needed for the waste being stored.</p> <p>Verify the following by inspecting storage areas:</p> <ul style="list-style-type: none"> <li>- containers are not stored more than two high and have pallets between them</li> <li>- containers are positioned so that the label is clearly visible at all times</li> <li>- containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system)</li> <li>- at least 3 ft [0.91 m] of aisle space is provided between rows of containers</li> <li>- there is adequate spill control/containment material on hand.</li> </ul> <p>Determine the distance from storage containers holding ignitable or reactive waste to the property line.</p> <p>Verify that inspections are conducted at least weekly to look for leaking containers and signs of deterioration of containers.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>4-74.</b> Generator storage areas for hazardous waste must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste (40 CFR 262.34(a)(4) and 265.30 through 265.37).</p>	<p>Determine if the following required equipment is easily accessible and in working condition by inspecting the Generator storage areas:</p> <ul style="list-style-type: none"> <li>- internal communications or alarm system capable of providing immediate emergency instruction to facility personnel</li> <li>- a telephone or hand-held two way radio</li> <li>- portable fire extinguishers and special extinguishing equipment (foam, inert gas, or dry chemicals)</li> <li>- spill control equipment</li> <li>- decontamination equipment</li> <li>- fire hydrants or other source of water (reservoir, storage tank, etc.) with adequate volume and pressure, foam producing equipment, or automatic sprinklers, or water spray systems.</li> </ul> <p>Determine if equipment is tested and maintained as necessary to insure proper operation in an emergency.</p> <p>Verify that sufficient aisle space is maintained to allow unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the operation.</p> <p>Verify that police, fire departments, and emergency response teams are familiar with the layout of the facility, properties of the waste being handled, and general operations as appropriate for the type of waste and potential need for such services.</p> <p>Verify that the hospital is familiar with the site and the types of injuries that could result in an emergency as appropriate for the type of waste and potential need for such services.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>GENERATORS</b></p> <p><b>Storage Tanks</b></p> <p><b>4-75.</b> Secondary containment is required for specific types of tank systems used to store or treat hazardous waste at generators (40 CFR 262.34(a)(1)(ii) 265.190(a), 265.190(b), and 265.193(a)).</p> <p><b>4-76.</b> Secondary containment on tank systems at generators must meet specific requirements (40 CFR 262.34(a)(1)(ii), 265.190(a), and 265.193(b) through 265.193(d)).</p>	<p>(NOTE: A Generator generates more than 1000 kg [2204.62 lb, 265 gal] of hazardous waste in any one month of a calendar year.)</p> <p>Verify that tanks that store or treat material that becomes hazardous waste after 12 January 1987 have secondary containment as follows:</p> <ul style="list-style-type: none"> <li>- for those existing tank systems of known and documentable age, within 2 yr of the date the material becomes a hazardous waste</li> <li>- for those existing tank systems for which the age cannot be documented, within 8 yr of the date the material becomes a hazardous waste; but if the age of the facility is greater than 7 yr, by the time the facility reaches 15 yr of age or within 2 yr of the date the material becomes a hazardous waste, whichever comes later.</li> </ul> <p>(NOTE: The following are exempt from these requirements:</p> <ul style="list-style-type: none"> <li>- tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor</li> <li>- tank systems, including sumps, that serve as part of a secondary containment system to collect or contain releases of hazardous wastes.)</li> </ul> <p>Verify that secondary containment meets the following criteria:</p> <ul style="list-style-type: none"> <li>- it is designed, installed, and operated to prevent the migration of liquid out of the system</li> <li>- it is capable of detecting and collecting releases and accumulated liquids until removal is possible</li> <li>- it is constructed of or lined with materials compatible with the wastes</li> <li>- it is placed on a foundation or base that can provide appropriate support and prevent failure due to settlement, compression, or upset</li> <li>- a leak-detection system is present that is designed and operated to detect the failure of either the primary or secondary containment structure or the release of any hazardous waste within 24 h or the earliest practicable time</li> <li>- it is sloped or designed to drain and remove liquids from leaks, spills, or precipitation.</li> </ul> <p>Verify that spilled or leaked wastes are removed from secondary containment within 24 h or as timely as possible.</p>

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<b>4-76. (continued)</b>	<p>Verify that secondary containment for tanks includes one or more of the following:</p> <ul style="list-style-type: none"> <li>- a liner (external to the tank)</li> <li>- a vault</li> <li>- a double-walled tank</li> <li>- an equivalent approved device.</li> </ul> <p>(NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)</p>
<b>4-77. External liners, vaults and double-walled tanks at generators are required to meet specific standards (40 CFR 262.34(a)(1)(ii), 265.190(a), and 265.193(e)).</b>	<p>Verify that external liner systems meet the following requirements:</p> <ul style="list-style-type: none"> <li>- they are designed and operated so that 100 percent of the capacity of the largest tank within the boundary would be contained</li> <li>- they prevent runoff and infiltration of precipitation into the secondary containment unless the collection system has sufficient capacity to handle runoff or infiltration</li> <li>- it is free of cracks or gaps</li> <li>- it surrounds the tank completely and covers all surrounding earth likely to come into contact with the waste if there is a release</li> <li>- capacity is sufficient to contain precipitation from a 25-yr, 24-h rainfall event.</li> </ul> <p>Verify that vault systems meet the following criteria:</p> <ul style="list-style-type: none"> <li>- it will contain 100 percent of the capacity of the largest tank within its boundary</li> <li>- it prevents runoff and infiltration of precipitation unless there is sufficient excess capacity</li> <li>- it is constructed with chemical-resistant water stops at all joints</li> <li>- it has an impermeable interior coating that is compatible with the wastes it contains</li> <li>- has a means to protect against the formation and ignition of vapors within the vault if the waste is ignitable or reactive</li> <li>- it has an exterior moisture barrier or otherwise operated to prevent migration of moisture into the vault.</li> </ul>

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<b>4-77. (continued)</b>	<p>Verify that double-walled tanks meet the following criteria:</p> <ul style="list-style-type: none"> <li>- it is designed as an integral structure so that any release is contained by the outer shell</li> <li>- it is protected from both corrosion of the primary tank and the external surface of the outer shell if constructed of metal</li> <li>- it has a built-in continuous leak detection system capable of detecting a release within 24 h.</li> </ul> <p>(NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)</p>
<b>4-78.</b> Tank ancillary equipment at generators must also be provided with secondary containment (40 CFR 262.34(a)(1)(ii), 265.190(a), and 265.193(f)).	<p>Verify that ancillary equipment, except for the following, has secondary containment:</p> <ul style="list-style-type: none"> <li>- aboveground piping that is visually inspected for leaks on a daily basis</li> <li>- welded flanges, welded joints, and welded connections that are visually inspected for leaks on a daily basis</li> <li>- sealless or magnetic coupling pumps and sealless valves, that are visually inspected for leaks on a daily basis</li> <li>- pressurized aboveground piping systems with automatic shutoff valves that are visually inspected for leaks on a daily basis.</li> </ul> <p>(NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)</p>
<b>4-79.</b> Existing tank systems that do not have secondary containment are required to meet specific requirements 40 CFR 262.34.(a)(1)(ii), 265.190(a), 265.191(a) through 265.191(c), and 265.193(i)).	<p>Verify that existing tank systems without secondary containment meet the following:</p> <ul style="list-style-type: none"> <li>- for nonenterable underground tanks a leak test is conducted annually</li> <li>- for other than nonenterable underground tanks either a leak test is done annually or the facility develops a schedule and procedure for an assessment of the overall condition by an independent, qualified, registered, professional engineer.</li> </ul> <p>Verify that the facility maintains a record of the results of testing and assessments.</p> <p>Verify that tank systems which store or treat materials that become hazardous waste after 14 July 1986 are assessed within 12 mo after the waste becomes hazardous.</p>

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<p><b>4-79. (continued)</b></p> <p><b>4-80.</b> Generators with new tank systems must submit to the Regional Administrator a written assessment review certified by an independent, qualified, registered professional engineer to certify that the tank was installed according to specific standards (40 CFR 262.34(a)(1)(ii) and 265.192).</p> <p><b>4-81.</b> Tanks used for hazardous waste treatment or storage at generators must follow certain operating requirements (40 CFR 262.34(a)(1)(ii) and 265.194).</p> <p><b>4-82.</b> Tank systems at generators must comply with requirements for ignitable, reactive, or incompatible wastes (40 CFR 262.34(a)(1)(ii), 265.198, and 265.199).</p>	<p>(NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)</p> <p>Determine if the facility has any new tank systems.</p> <p>Verify that, when the tanks are installed they are handled, so as to prevent damage to the tank and any backfill material that is used is a noncorrosive, porous, homogeneous substance.</p> <p>Verify that the facility keeps on file the written assessments from the individuals required to certify the tank and supervise the installation of the tank.</p> <p>Verify that hazardous wastes or treatment reagents are not placed in tanks if they could cause the tank system (including ancillary equipment, or containment system) to fail.</p> <p>Verify that appropriate measures are taken to prevent overfill, including:</p> <ul style="list-style-type: none"> <li>- spill prevention controls</li> <li>- overfill prevention controls</li> <li>- maintenance of sufficient freeboard to prevent overtopping by wave, wind action or precipitation for uncovered tanks.</li> </ul> <p>Verify that ignitable or reactive wastes are not placed in a tank system, unless one of the following is met:</p> <ul style="list-style-type: none"> <li>- the waste is treated, rendered, or mixed before or immediately after placement in the tank system so that it is no longer reactive or ignitable and the minimum requirements for reactive and ignitable wastes are met</li> <li>- the waste is treated or stored in such a way that it is protected from any material or conditions that may cause the waste to ignite or react</li> <li>- the tank system is used solely for emergencies.</li> </ul>

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<b>4-82. (continued)</b>	<p>Verify that the minimum protective distances between waste management areas and any public ways, streets, alleys, or an adjoining property line that can be built upon as required in Tables 2-1 through 2-6 of the National Fire Protection Association's (NFPA's) <i>Flammable and Combustible Liquids Code</i> are maintained.</p> <p>Verify that incompatible waste, or incompatible wastes and materials, are not placed in the same tank system unless minimum safety requirements are met.</p> <p>Verify that hazardous waste is not placed in a tank system that has not been decontaminated and that previously held an incompatible waste or material unless minimum safety requirements are met.</p>
<b>4-83. Generators must conduct inspections of tank systems and associated equipment (40 CFR 262.34(a)(1)(ii) and 265.195).</b>	<p>Verify that a schedule and procedure has been developed and is followed to inspect overfill controls.</p> <p>Determine if the following inspections are conducted at least once a day:</p> <ul style="list-style-type: none"> <li>- data gathered from monitoring and detection equipment</li> <li>- overfill/spill control equipment at facilities to ensure it is in good working order</li> <li>- aboveground portions of the tank to detect corrosion or releases</li> <li>- tank monitoring equipment (e.g., pressure and temperature gauges)</li> <li>- construction materials and area surrounding tank including the secondary containment system for signs of leakage (wet spots, dead vegetation).</li> </ul> <p>Verify that the proper operation of cathodic protection systems are inspected within 6 mo after initial installation and annually thereafter.</p> <p>Verify that all sources of impressed current are inspected and/or tested every other month.</p> <p>Verify that inspections are documented.</p>

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<p><b>4-84.</b> Tank systems or secondary containment systems at generators from which there has been a leak or spill or which have been declared unfit for use must be removed from service immediately and meet specific requirements (40 CFR 262.34(a)(1)(ii) and 265.196).</p>	<p>Verify that the following steps are taken:</p> <ul style="list-style-type: none"> <li>- the flow or addition of hazardous wastes to the tank is stopped</li> <li>- the hazardous waste is removed from the tank:               <ul style="list-style-type: none"> <li>- within 24 h of leak detection (or other reasonable time as demonstrated by the owner/operator) remove as much waste from the tank as necessary to prevent further release and allow inspection and repair</li> <li>- within 24 h (or in as timely a manner as is possible to prevent harm to human health and the environment) remove waste released to secondary containment system</li> </ul> </li> <li>- a visual inspection of the release is done and:               <ul style="list-style-type: none"> <li>- action is taken to prevent further migration to soils or surface or groundwater</li> <li>- any visible contamination of soil and surface water is removed and disposed.</li> </ul> </li> </ul> <p>Verify that notification is made within 24 h for any release to the environment to the Regional Administrator.</p> <p>Verify that a report is submitted within 30 days.</p> <p>(NOTE: Releases of 0.45 kg (1 lb) or less that are immediately contained and cleaned up are exempt from reporting.)</p> <p>Verify that the tank and/or secondary containment is repaired prior to its return to service and that extensive repairs are certified by an independent, qualified, registered, professional engineer.</p>
<p><b>4-85.</b> Generators are required to follow specific procedures when closing a tank system (40 CFR 262.34(a)(1)(ii), 265.197(a), and 265.197(b)).</p>	<p>Determine if the facility has closed any tank systems.</p> <p>Verify that all waste residues, contaminated containment system components, contaminated soils, and structures and equipment contaminated with waste have been removed or decontaminated.</p> <p>Verify that, if it is not possible and/or practicable to remove or decontaminate all soils, the facility closes the tank and performs postclosure care as required for landfills.</p>

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<p><b>GENERATORS</b></p> <p><b>Storage Tank Emissions</b></p> <p><b>4-86.</b> Tanks used for the storage of hazardous waste are required to meet specific design standards for air emissions control (40 CFR 262.34(a) through 265.1085(a), and 265.1085(c)).</p>	<p>(NOTE: See Appendix 4-8 for guidance on the schedule for implementation of air emissions standards in 40 CFR 265.1080 through 265.1091. Also in relation to the requirements for air emissions standard, see the definition of Exempted Waste Management Units.)</p> <p>(NOTE: A Generator generates more than 1000 kg [2204.62 lb, 265 gal] of hazardous waste in any one month of a calendar year.)</p> <p>(NOTE: These requirements do not apply to a tank in which the owner or operator has stopped adding hazardous waste and the owner or operator has begun implementing or completed closure following an approved closure plan (40 CFR 265.1080(b)(3)).)</p> <p>Verify that tanks used for the storage of hazardous waste meet one of the following:</p> <ul style="list-style-type: none"> <li>- the tank is equipped with a cover (e.g., a fixed roof) that is vented through a closed vent system to a control device</li> <li>- the tank is equipped with a fixed roof and internal floating roof meeting 40 CFR 265.1091</li> <li>- the tank is equipped with an external floating roof meeting 40 CFR 265.1091</li> <li>- the tank is a pressure tank designed to operate as a closed system so that the tank operates with no detectable organic emissions at all times that hazardous waste is in the tank.</li> </ul>

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4-86. (continued)	<p>(NOTE: As an alternative to the above tank options, hazardous waste may be placed in a tank with an approved cover when the hazardous waste meets all the following conditions:</p> <ul style="list-style-type: none"> <li>- the hazardous waste is neither mixed, stirred, agitated, nor circulated with the tank using a process that results in splashing, frothing, or visible turbulent flow on the waste surface during normal process operations</li> <li>- the hazardous waste in the tank is not heated by the owner or operator except during conditions requiring that the waste be heated to prevent the waste from freezing or to maintain adequate waste flow conditions for continuing normal process operations</li> <li>- the hazardous waste is not treated using a waste stabilization process that produces an exothermic reaction</li> <li>- the maximum organic vapor pressure of the hazardous waste in the tank is less than the following applicable values: <ul style="list-style-type: none"> <li>- if the tank design capacity is equal to or greater than 151 m<sup>3</sup> [39,889.7 gal], then the maximum organic vapor pressure is less than 5.2 kPa</li> <li>- if the tank design capacity is equal to or greater than 75 m<sup>3</sup> [19,812.8 gal] but less than 151 m<sup>3</sup> [39,889.7 gal], then the maximum organic vapor pressure is less than 27.6 kPa</li> <li>- if the tank design capacity is less than 75 m<sup>3</sup> [19,812.8 gal], then the maximum organic vapor pressure is less than 76.6 kPa.)</li> </ul> </li> </ul> <p>(NOTE: The requirements in 40 CFR 265.1085 do not apply to the following tanks:</p> <ul style="list-style-type: none"> <li>- a tank in which all the hazardous waste entering the tank meets the following conditions: <ul style="list-style-type: none"> <li>- the average VO concentration of the hazardous waste at the point of waste origination is less than 100 ppmw</li> <li>- the organic content of the hazardous waste has been reduced by an organic destruction or removal process</li> </ul> </li> <li>- a tank used for biological treatment of waste in accordance with a biological process that destroys or degrades the organics contained in the hazardous waste such that either of the following is met: <ul style="list-style-type: none"> <li>- the organic reduction efficiency for the process is equal to or greater than 95 percent and the organic biodegradation efficiency for the process is equal to or greater than 95 percent</li> <li>- the total actual organic mass biodegradation rate for all hazardous waste treated by the process is equal to or greater than the required organic mass removal rate.)</li> </ul> </li> </ul>



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<p>4-87. When the facility chooses to use alternate control requirements for tanks with fixed roofs and internal floating roofs, specific requirements must be met (40 CFR 262.34(a)(1)(ii), 265.1091(b)(1), and 265.1091(c)(1)).</p>	<p>(NOTE: These requirements do not apply to a tank in which the owner or operator has stopped adding hazardous waste and the owner or operator has begun implementing or completed closure following an approved closure plan (40 CFR 265.1080(b)(3)).)</p> <p>Verify that, if the tank has a fixed roof and internal floating roof, it meets the following requirements:</p> <ul style="list-style-type: none"> <li>- the cover and all cover openings are designed to operate with no detectable organic emissions when all cover openings are secured in a closed sealed position</li> <li>- each cover opening is secured in a closed, sealed position at all times hazardous waste is in the tank except when it is necessary to open the cover to do one of the following: <ul style="list-style-type: none"> <li>- add, remove, inspect, or sample the material in the tank</li> <li>- inspect, maintain, repair, or replace equipment located inside the tank</li> <li>- vent gases or vapors from the tank to a closed-vent system connected to a control device.</li> </ul> </li> <li>- the internal floating roof is floating on the waste surface at all times except during initial fill and when the tank is completely empty</li> <li>- the internal floating roof has one of the following closure devices between the wall and the tank and the edge of the internal floating roof: <ul style="list-style-type: none"> <li>- a foam or liquid filled seal mounted in contact with the waste between the wall of the tank and the floating roof continuously around the circumference of the tank</li> <li>- two seals mounted one above the other so that each forms a continuous closure that completely covers the space between the wall of the tank and the edge of the internal floating roof</li> <li>- a mechanical shoe seal</li> </ul> </li> <li>- openings in a noncontact internal floating roof, except for automatic bleeder vents and the rim space vents provide a projection below the waste surface</li> <li>- openings in the internal floating roof except for leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells, and stub drains are equipped with a cover or lid which is kept in a closed position at all times when the device is in actual use</li> <li>- automatic bleeder vents are equipped with a gasket and are closed at all times when the roof is floating except when the roof is being floated off or is being landed on roof leg supports</li> <li>- rim space vents are equipped with a gasket and are set to open only when the internal roof is not floating or at the manufacturer's recommended setting</li> <li>- every penetration of the internal floating roof for the purpose of sampling is a sampling well</li> </ul>

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4-87. (continued)	<ul style="list-style-type: none"> <li>- sample wells have a slit fabric cover that covers at least 90 percent of the opening</li> <li>- penetrations of the internal floating roof that allow for passage of a column has a flexible fabric seal sleeve or a gasketed sliding cover (ladder passages have a gasketed sliding cover.</li> </ul> <p>Verify that, if the tank has a fixed roof and internal floating roof, it meets the following inspection and monitoring requirements:</p> <ul style="list-style-type: none"> <li>- visual inspection of the internal floating roof, the primary seal, and the secondary seal if there is one, prior to filling the tank with waste</li> <li>- visual inspection of the internal floating roof and the primary seal or the secondary seal through manholes and roof hatches on the fixed roof at least once every 12 mo if they are liquid mounted or mechanical shoe primary seals</li> <li>- tanks with double seal systems will:               <ul style="list-style-type: none"> <li>- every 5 yr visually inspect the internal floating roof, the primary seal, the secondary seal, gaskets, slotted membranes, and sleeve seals</li> <li>- visually inspect the internal floating roof and the primary seal or the secondary seal through manholes and roof hatches on the fixed roof at least once every 12 mo if they are liquid mounted or mechanical shoe primary seals</li> </ul> </li> <li>- visually inspect the internal floating roof, the primary seal, the secondary seal, gaskets, slotted membranes, and sleeve seals each time the tank is emptied and degassed (this inspection will not occur at intervals greater than 10 yr for tanks conducting annual visual inspections).</li> </ul> <p>Verify that the Regional administrator is notified in writing at least 30 days prior to the filling or refilling of tanks.</p> <p>(NOTE: If there is a problem with the tank, it will be repaired or emptied, and removed from service within 45 days.)</p> <p>Verify that, if the tank has a fixed roof and internal floating roof, the following information is kept in the operating record:</p> <ul style="list-style-type: none"> <li>- documentation that describes the control equipment design and certifies that the control equipment meets regulatory specifications</li> <li>- records of each inspection</li> <li>- records of noncompliance</li> <li>- records of repair.</li> </ul>

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<p><b>4-88.</b> When the facility chooses to use alternate control requirements for tanks with an external floating roof, specific requirements must be met (40 CFR 262.34(a)(1)(ii), 265.1091(a)(2), 265.1091(b)(2), and 265.1091(c)(2)).</p>	<p>(NOTE: These requirements do not apply to a tank in which the owner or operator has stopped adding hazardous waste and the owner or operator has begun implementing or completed closure following an approved closure plan (40 CFR 265.080(b)(3)).)</p> <p>Verify that, if the tank is equipped with an external floating roof, it meets the following requirements:</p> <ul style="list-style-type: none"> <li>- it is equipped with a closure device between the wall of tank and the roof edge</li> <li>- each opening in a noncontact external floating roof, except for automatic bleeder vents and rim space vents, has a projection below the waste surface</li> <li>- openings in the roof except for automatic bleeder vents, rim space vents, roof drains, and leg sleeves, are equipped with a gasketed cover, seal, or lid which is kept in a closed position at all times when the device is in actual use</li> <li>- automatic bleeder vents are equipped with a gasket and are closed at all times when the roof is floating except when the roof is being floated off or is being landed on roof leg supports</li> <li>- rim vents are equipped with a gasket and are set to open only when the roof is being floated the roof leg supports or at the manufacturers recommended settings</li> <li>- emergency roof drains are to have a slotted membrane fabric cover that covers at least 90 percent of the area of the opening</li> <li>- the roof is floating on the waste at all times except during initial fill and when the tank is completely emptied.</li> </ul> <p>Verify that, if the tank is equipped with an external floating roof, inspection and monitoring is performed as follows:</p> <ul style="list-style-type: none"> <li>- measure the gaps between the tank wall and the primary seal during the hydrostatic testing of the tank or within 60 days of the initial fill and at least once every 5 yr thereafter</li> <li>- measure the gaps between the tank wall and the secondary seal within 60 days of the initial fill and at least once per year thereafter</li> <li>- measure seal gaps at one or more floating roof levels when the roof is floating off the roof leg supports</li> <li>- measure seal gaps around the entire circumference of the tank in each place where a 0.332 cm [0.13 in.] diameter uniform probe passes freely between the seal and wall of the tank and measure the circumferential distance of such location</li> <li>- visually inspect the external floating roof, the primary seal, the secondary seal, and fittings each time the vessel is emptied and degassed.</li> </ul>

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<p><b>4-88. (continued)</b></p>	<p>(NOTE: If a tank ceases to hold waste for a period of 1 yr or more, subsequent introduction of waste will be considered an initial fill.)</p> <p>Verify that the Regional Administrator is notified 30 days in advance of any gap measurement activity or tank filling/refilling.</p> <p>Verify that necessary repairs are made within 45 days of identification.</p> <p>Verify that, if the tank is equipped with an external floating roof, the following information is kept in the operating record:</p> <ul style="list-style-type: none"> <li>- documentation that describes the control equipment design and certifies that the control equipment meets regulatory specifications</li> <li>- records of gap measurements</li> <li>- records of noncompliance.</li> <li>- records of repair.</li> </ul>
<p><b>4-89.</b> Covers on tanks are required to meet specific design and operating requirements (40 CFR 262.34(a)(1)(ii), 265.1085(d)(1), and 265.1085(f)).</p>	<p>(NOTE: These requirements do not apply to a tank in which the owner or operator has stopped adding hazardous waste and the owner or operator has begun implementing or completed closure following an approved closure plan (40 CFR 265.1080(b)(3)).)</p> <p>Verify that the cover vents the organic vapors emitted from hazardous waste in the tank through a closed vent system connected to a control device.</p> <p>Verify that the cover is designed and operated to meet the following:</p> <ul style="list-style-type: none"> <li>- the cover and all cover opening s are designed to operate with no detectable organic emissions when all cover openings are secured in a closed sealed position</li> <li>- each cover opening is secured in a closed, sealed position at all times hazardous waste is in the tank except when it is necessary to open the cover to do one of the following: <ul style="list-style-type: none"> <li>- add, remove, inspect, or sample the material in the tank</li> <li>- inspect, maintain, repair, or replace equipment located inside the tank</li> <li>- vent gases or vapors from the tank to a closed-vent system connected to a control device.</li> </ul> </li> </ul>

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**4-90.** Closed vent systems are required to be designed according to 265.1088 as appropriate (40 CFR 262.34(a)(1)(ii) and 265.1085(d)(2)).

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(NOTE: These requirements do not apply to a tank in which the owner or operator has stopped adding hazardous waste and the owner or operator has begun implementing or completed closure following an approved closure plan (40 CFR 265.1080(b)(3)).

Verify that closed vent systems:

- route the gases, vapors, and fumes emitted from the hazardous waste to a control device
- are designed according to 265.1033(k) (see checklist item 4-96)
- meet the following if they contains one or more bypass devices that could be used to divert all or a portion of the gases, vapors, or fumes from entering the control device:
  - each bypass device, except for low leg drains, high point bleeds, analyzer vents, open-ended valves or lines, and safety devices meet one of the following:
    - it is equipped with a flow indicator at the inlet to the bypass device that indicates at least once every 15 min whether gas, vapor, or fume flow is present in the bypass device
    - it is equipped with a valve installed at the inlet to the bypass device secured in the closed position using a car-seal or a lock and key type configuration
  - seals or closure mechanism are inspected at least once a month.

Verify that the control device meets the following:

- it is one of the following:
  - a control device designed and operated to reduce the total organic content of the inlet vapor stream vented to the control device by at least 95 percent weight
  - an enclosed combustion device
  - a flare
- it is operating at all times when gases, vapors, or fumes are vented from the waste management unit through the closed vent system to the control device
- all activated carbon in the control device is replaced on a regular basis after start-up if carbon adsorption is used
- operation and maintenance is done in accordance with 265.1033(j) if a control device is used other than a thermal vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system

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<p><b>4-90. (continued)</b></p>	<ul style="list-style-type: none"> <li>- achievement of control device performance requirements is done by a performance test or design analysis for each control device except the for following:               <ul style="list-style-type: none"> <li>- a flare</li> <li>- a boiler or process heater with a design heat input capacity of 44 MW or greater</li> <li>- a boiler of process heater into which the vent stream is introduced with the primary fuel</li> <li>- a boiler or process heater burning hazardous waste for which a final permit has been issued</li> <li>- a boiler or process heater for which the owner/operator has certified compliance</li> </ul> </li> <li>- carbon adsorption systems demonstrate achievement of performance requirements based on the total quantity of organics vented to the atmosphere from all carbon adsorption equipment that is used for organic adsorption, organic desorptions or carbon regeneration, organic recovery, and carbon disposal.</li> </ul>
<p><b>4-91.</b> Tanks are required to have enclosed pipes or other closed systems for the transfer of hazardous waste in certain circumstances (40 CFR 262.34(a)(1)(ii) and 265.1085(e)).</p>	<p>(NOTE: These requirements do not apply to a tank in which the owner or operator has stopped adding hazardous waste and the owner or operator has begun implementing or completed closure following an approved closure plan (40 CFR 265.1080(b)(3)).)</p> <p>Verify that closed systems are used to:</p> <ul style="list-style-type: none"> <li>- transfer all hazardous waste to the tank from another tank, surface impoundment, or container regulated under 40 CFR 265.1080 through 265.1091 as appropriate</li> <li>- transfer all hazardous waste from the tank to another tank, surface impoundment, or container subject to this Subpart unless the hazardous waste is exempted.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>4-92.</b> Safety devices which vent directly to the atmosphere which are used on the tank, cover, closed vent system, or control device are required to meet specific standards (40 CFR 262.34(a)(1)(ii) and 265.1085(g)).</p>	<p>(NOTE: These requirements do not apply to a tank in which the owner or operator has stopped adding hazardous waste and the owner or operator has begun implementing or completed closure following an approved closure plan (40 CFR 265.1080(b)(3)).)</p> <p>Verify that, if safety devices which vent directly to the atmosphere are used on the tank, cover, closed vent system, or control device, they meet all of the following conditions:</p> <ul style="list-style-type: none"> <li>- the safety device is not used for planned or routine venting of organic vapors from the tank or closed vent system connected to a control device</li> <li>- the safety device remains in a closed, sealed position at all times except when an unplanned event requires that the device open for the purpose of preventing physical damage or permanent deformation of the tank, cover, closed vent system, or control device in accordance with good engineering and safety practices for handling flammable/combustible, explosive, or other hazardous materials.</li> </ul> <p>(NOTE: An example of an unplanned event is a power outage.)</p>
<p><b>4-93.</b> Facilities are required to meet inspection and monitoring requirements for tanks (40 CFR 262.34(a)(1)(ii) and 265.1089).</p>	<p>(NOTE: These requirements do not apply to a tank in which the owner or operator has stopped adding hazardous waste and the owner or operator has begun implementing or completed closure following an approved closure plan (40 CFR 265.1080(b)(3)).)</p> <p>Verify that the facility has a written plan and schedule for performing inspections and monitoring.</p> <p>Verify that covers are visually inspected and monitored for detectable emissions except as follows:</p> <ul style="list-style-type: none"> <li>- the followings types of tank covers: <ul style="list-style-type: none"> <li>- a tank internal floating roof that is inspected and monitored according to 265.1091 (see checklist items 4-87 and 4-88)</li> <li>- a tank external floating roof that is inspected and monitored according to 265.1091 (see checklist items 4-87 and 4-89)</li> </ul> </li> <li>- the portion of a partially buried or entirely underground tank that are not above the ground surface.</li> </ul>

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**4-93. (continued)**

Verify that covers and all cover openings are inspected and monitored as follows:

- visually inspected initially and monitored for detectable organic emissions on or before the date that the tank using the cover has to comply with these requirements
- visually every 6 mo after the initial inspection except for the following:
  - a cover opening that is designated as unsafe to inspect and monitor
  - a cover opening on a cover installed and placed in operation before 6 December 1994 that is designated as difficult to monitor and inspect.

Verify that, when a leak is detected, the first attempt at repair is no later than 5 calendar days after detection and repair is completed no later than 15 calendar days after detection.

(NOTE: If a repair cannot be completed within 15 days then no more hazardous waste is to be added to the tank until the repair is complete.)

Verify that closed vent systems and control devices are inspected and monitored in accordance with 265.1033 (see checklist item 4-96).



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>4-94.</b> Facilities are required to meet documentation requirements for tanks (40 CFR 262.34(a)(1)(ii) and 265.1090).</p>	<p>(NOTE: These requirements do not apply to a tank in which the owner or operator has stopped adding hazardous waste and the owner or operator has begun implementing or completed closure following an approved closure plan (40 CFR 265.1080(b)(3)).)</p> <p>Verify that the facility records and maintains the following:</p> <ul style="list-style-type: none"> <li>- information for each cover installed on a tank on the cover design and certification that the cover meets regulatory standards</li> <li>- information for each closed vent system and control device installed including: <ul style="list-style-type: none"> <li>- certification signed and dated by the owner or operator stating that the control device is designed to operate at the performance level document by design analysis or by performance tests when the tank would be operating at capacity or the highest level reasonably expected to occur</li> <li>- design documentation if design analysis is used, including certification by the owner or operator the control equipment meets applicable specifications</li> <li>- a performance test plan if performance tests are used</li> </ul> </li> <li>- records for all visual inspections</li> <li>- records for all monitoring for detectable organic emissions</li> <li>- records of the date of each attempt to repair a leak, repair methods applied, and the date of successful repair</li> <li>- records for all continuous emissions monitoring</li> <li>- records of the management of carbon removed from carbon adsorption systems</li> <li>- records of all inspections of covers installed on tanks.</li> </ul> <p>Verify that the following information is kept if air emissions controls are used for a tank:</p> <ul style="list-style-type: none"> <li>- date and time each waste sample is collected for direct measurement of the maximum organic vapor pressure</li> <li>- results of each determination of the maximum organic vapor pressure of the waste in the tank</li> <li>- records specifying the tank dimensions and design capacity.</li> </ul> <p>Verify that, when air emissions controls are not used on a tank, waste determination information is recorded in the facility log.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
4-94. (continued)	<p>Verify that, if the facility uses either of the following, the identification number of the incinerator, boiler, or industrial furnace is recorded:</p> <ul style="list-style-type: none"> <li>- a process that removes or destroys the organics contained in the hazardous waste and meets all the following conditions: <ul style="list-style-type: none"> <li>- all the materials entering the process are hazardous wastes</li> <li>- from the point of waste origination through the point where the hazardous waste enters the process, the hazardous waste is continuously managed in waste management units which use air emissions controls as applicable to the waste management unit</li> <li>- the average VO concentration of the hazardous waste at the point of waste treatment is less than the lowest average VO concentration at the point of waste origination determined for each of the individual hazardous waste streams entering the process or 100 ppmw, whichever value is lower</li> </ul> </li> <li>- a hazardous waste incinerator for which the owner/operator has either been issued a final permit or has certified compliance.</li> </ul> <p>Verify that the covers which are designated as unsafe to monitor are listed in a log with a list of identification number for tanks and an explanation of why they are unsafe to inspect and monitor and a plan and schedule of inspection and monitoring.</p> <p>Verify that all records, except design information records are kept for a minimum of 3 yr.</p> <p>Verify that design information records are kept for the life of the equipment.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>GENERATORS</b></p> <p><b>Emissions From Process Vents</b></p> <p><b>4-95.</b> Generators with process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations that manage hazardous wastes with organic concentrations of at least 10 ppmw are required to meet specific standards (40 CFR 262.34(a)(1)(i), 262.34(a)(1)(ii), 265.1030(b), and 265.1032).</p> <p><b>4-96.</b> When a generator uses a closed-vent system and control device to meet the standards for total organic emissions, the closed-vent system and control device must meet certain minimum requirements (40 CFR 262.34(a)(1)(i), 262.34(a)(1)(ii), and 265.1033).</p>	<p>(NOTE: A Generator generates more than 1000 kg [2204.62 lb, 265 gal] of hazardous waste in any one month of a calendar year.)</p> <p>Verify that one of the following is met:</p> <ul style="list-style-type: none"> <li>- total organic emissions from the process vents do not exceed 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 tons/yr)</li> <li>- total organic emissions are reduced by use of a control device from all process vents by 95 weight percent.</li> </ul> <p>Verify that control devices involving vapor recovery are designed and operated to recover the organic vapors vented to the air with an efficiency of 95 weight percent or greater unless the total organic emission limit can be attained at an efficiency of less than 95 weight percent.</p> <p>Verify that, if an enclosed combustion device is used (i.e., vapor incinerator, boiler, or process heater), it is designed and operated to reduce the organic emissions vented to it by 95 weight percent or greater, to achieve a total organic compound concentration of 20 ppmv or to provide a minimum residence time of 0.50 s at a minimum temperature of 760 °C [1400 °F].</p> <p>Verify that, if a boiler or process heater is used as the control device, the vent stream is introduced into the flame zone of the boiler or process heater.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>4-96. (continued)</b></p>	<p>Verify that; if flares are used:</p> <ul style="list-style-type: none"> <li>- they are designed and operated with no visible emissions except for periods not in excess of 5 min during any 2 consecutive hours</li> <li>- they are operated with a flame present at all times</li> <li>- they are used only if the net heating value of the gas being combusted is 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam assisted or air assisted</li> <li>- if nonassisted, the net heating value of the gas being combusted is 7.45 MJ/scm (200 Btu/scf) or greater</li> <li>- if nonassisted or steam assisted, have an exit velocity less than 18.3 m/s (60 ft/s) except: <ul style="list-style-type: none"> <li>- when the net heating value of the gas being combusted is greater than 37.3 MJ/scm (1000 Btu/scf) and the exit velocity is equal to or greater than 18.3 m/s (60 ft/s) but less than 122 m/s (400 ft/s).</li> </ul> </li> </ul> <p>Verify that each monitor and control device is inspected on a routine basis.</p>
<p><b>4-97.</b> Generators are required to maintain specific records pertaining to process vent emissions (40 CFR 262.34(a)(1)(i), 262.34(a)(1)(ii), and 265.1035).</p>	<p>Verify that the following information is kept in the operating record:</p> <ul style="list-style-type: none"> <li>- an implementation schedule</li> <li>- up-to-date documentation of compliance</li> <li>- the test plan if test data is used to determine the organic removal efficiency or total organic compound concentration achieved by a control device</li> <li>- design documentation</li> <li>- monitoring and inspection results</li> <li>- notations of exceedance</li> <li>- the date of each control startup and shutdown.</li> </ul> <p>Verify that records of monitoring operations and inspection information are kept for 3 yr.</p> <p>(NOTE: See 40 CFR 265.1033 for special carbon adsorption system requirements.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>GENERATORS</b></p> <p><b>Air Emission Standards for Equipment Leaks</b></p> <p><b>4-98.</b> Generators with pumps in light liquid service that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 262.34(a)(1)(i), 262.34(a)(1)(ii), 265.1050(b), and 265.1052).</p>	<p>(NOTE: A Generator generates more than 1000 kg [2204.62 lb, 265 gal] of hazardous waste in any one month of a calendar year.)</p> <p>Verify that pumps in light liquid service are monitored monthly according to designated reference methods and inspected visually weekly.</p> <p>(NOTE: A leak is detected if there is an instrument reading of 10,000 ppm or greater or if there is an indication of liquid dripping from the pump seal.)</p> <p>Verify that, when a leak is detected, the first attempt at repair is made within 5 calendar days and repair is completed within 15 calendar days.</p> <p>(NOTE: Pumps equipped with dual mechanical seal systems and pumps designated for no detectable emissions that meet standards outlined here do not have to be monitored monthly or visually checked weekly.)</p> <p>Verify that pumps equipped with a dual mechanical seal system meet the following design and operation requirements:</p> <ul style="list-style-type: none"> <li>- the dual mechanical seal system is operated with barrier fluid at a pressure that is at all times greater than the pump stuffing box or equipped with a barrier fluid degassing reservoir that is connected by a closed-vent system to a control device or equipped with a system that purges the barrier fluid into a hazardous waste stream with no detectable emission to the atmosphere</li> <li>- the barrier fluid system has no hazardous waste with organic concentrations 10 percent or greater by weight</li> <li>- the barrier fluid system is equipped with a sensor that will detect failure if the seal is broken.</li> <li>- pumps are checked by visual inspection weekly</li> <li>- sensors are checked daily or equipped with an audible alarm that is checked monthly.</li> </ul> <p>Verify that pumps designated for no detectable emissions as indicated by an instrument reading of 500 ppm above background or less meet the following:</p> <ul style="list-style-type: none"> <li>- they are operated with no detectable emissions</li> <li>- they are tested for compliance initially upon designation, annually, and at other times as requested by the regional administrator</li> <li>- no externally actuated shaft penetrates the pump housing.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<b>4-98. (continued)</b>	<p>(NOTE: Any pump that is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal or seals to a control device is exempt from these requirements.)</p>
<p><b>4-99.</b> Generators with compressors that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 262.34(a)(1)(i), 262.34(a)(1)(ii), 265.1050(b), and 265.1053).</p>	<p>Verify that each compressor is equipped with a seal system which includes a barrier fluid system and prevents leakage of total organic emissions to the atmosphere except if:</p> <ul style="list-style-type: none"> <li>- it is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal to a control device</li> <li>- it is designated for no detectable emission and: <ul style="list-style-type: none"> <li>- it operates at an instrument reading of less than 500 ppm above background</li> <li>- it is tested for compliance initially upon designation, annually, and at times as requested by the regional administrator.</li> </ul> </li> </ul> <p>Verify that compressor seal systems meet one of the following:</p> <ul style="list-style-type: none"> <li>- it is operated with the barrier fluid at a pressure that is at all times greater than the compressor stuffing box pressure</li> <li>- it is equipped with a barrier fluid system that is connected to a closed-vent system to a control device</li> <li>- it is equipped with a system that purges the barrier fluid into a hazardous waste stream with no detectable emissions to the atmosphere.</li> </ul> <p>Verify that the barrier fluid is not a hazardous waste with organic concentrations 10 percent or greater by weight.</p> <p>Verify that each barrier fluid system is equipped with a sensor which will detect failure of the seal system, barrier fluid system, or both.</p> <p>Verify that each sensor is checked daily or it is equipped with an audible alarm that is checked monthly.</p> <p>(NOTE: Sensors on compressors located within the boundary of an unmanned site must be checked daily.)</p> <p>Verify that, when a leak is detected, the first attempt at repair is made within 5 calendar days and the repair is made within 15 calendar days.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>4-100.</b> Generators with pressure relief devices in gas/vapor service that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 262.34(a)(1)(i), 262.34(a)(1)(ii), 265.1050(b), and 265.1054).</p> <p><b>4-101.</b> Generators with sampling connecting systems that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 262.34(a)(1)(i), 262.34(a)(1)(ii), 265.1050(b), and 265.1055).</p>	<p>Verify that, except during pressure releases, each pressure relief device in gas/vapor service is operated with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background.</p> <p>Verify that, if there is a pressure release, the device is returned to a no detectable emission status within 5 calendar days and the device is monitored to ensure compliance.</p> <p>(NOTE: Any pressure relief device that is equipped with a closed-vent system capable of capturing and transporting leakage from the pressure relief device to a control device is exempt from these requirements.)</p> <p>Verify that each sampling connection system is equipped with a closed-purge system or closed-vent system.</p> <p>Verify that each closed-purge system or closed-vent system does one of the following:</p> <ul style="list-style-type: none"> <li>- returns the purged hazardous waste stream directly to the hazardous waste management process line with no detectable emissions to atmosphere</li> <li>- collects and recycles the purged hazardous waste stream with no detectable emissions to the atmosphere</li> <li>- is designed and operated to capture and transport all the purged hazardous waste stream to a control device.</li> </ul> <p>(NOTE: <i>In-situ</i> sampling systems are exempt from these requirements.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>4-102.</b> Generators with open-ended valves or lines that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific operation standards (40 CFR 262.34(a)(1)(i), 262.34(a)(1)(ii), 265.1050(b), and 265.1056).</p>	<p>Verify that each open-ended valve or line is equipped with a cap, blind flange, plug, or a second valve.</p> <p>Verify that the cap, blind flange, plug, or second valve seals the open end at all times, except during operations requiring hazardous waste stream flow through the open-ended valve of line.</p> <p>Verify that each open-ended valve or line equipped with a second valve is operated so the valve on the hazardous waste stream end is closed before the second valve is closed.</p> <p>Verify that, when a double block and bleed system is being used, the bleed valve is shut or plugged except during operations which require venting the line between the block valves.</p>
<p><b>4-103.</b> Generators with valves in gas/vapor service or light liquid service that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific monitoring and repair standards (40 CFR 262.34(a)(1)(i), 262.34(a)(1)(ii), 265.1050(b), 265.1057, and 265.1061).</p>	<p>Verify that valves in gas/vapor service or light liquid service are monitored monthly to detect leaks.</p> <p>(NOTE: A leak is detected if an instrument reading of 10,000 ppm or greater is measured. But, if a leak is not detected for 2 consecutive months, monitoring may be cut back to quarterly until a leak is detected.)</p> <p>Verify that the first attempt at repairing a leak is done within 5 calendar days after detection and leak repair is completed within 15 days after detection.</p> <p>(NOTE: Valves that are designated for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, do not have to be monitored monthly if:</p> <ul style="list-style-type: none"> <li>- the valve has no external actuating mechanism in contact with the hazardous waste stream</li> <li>- the valve is operated with emission less than 500 ppm above background</li> <li>- the valve is tested initially upon designation, annually, and at the request of the regional administrator.)</li> </ul> <p>(NOTE: Valves that are designated as unsafe to monitor are exempt from the requirement for monthly monitoring if:</p> <ul style="list-style-type: none"> <li>- the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger</li> <li>- a written monitoring plan is followed that requires monitoring as often as is reasonably practicable during safe to monitor times.)</li> </ul>



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<b>4-103. (continued)</b>	<p>(NOTE: Valves that are designated as difficult to monitor are exempt from monthly monitoring requirements if:</p> <ul style="list-style-type: none"> <li>- the valve cannot be monitored without elevating the monitoring personnel more than 2 m above a support surface</li> <li>- the hazardous waste management unit within which the valve is located was in operation before 21 June 1990</li> <li>- a written monitoring plan is followed that requires the monitoring of the valve at least once per calendar year.)</li> </ul> <p>(NOTE: The generator may elect to have all valves within a hazardous waste management unit comply with an alternative standard of no greater than 2 percent of the valves to leak.)</p>
<p><b>4-104.</b> Generators with pumps and valves in heavy liquid service, pressure relief devices in light liquid service or heavy liquid service, and other connectors that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific monitoring and repair standards (40 CFR 262.34(a)(1)(i), 262.34(a)(1)(ii), 265.1050(b), and 265.1058).</p>	<p>Verify that pumps and valves in heavy liquid service, pressure relief devices in light liquid service or heavy liquid service, and other connectors are required to be monitored within 5 days if evidence of a potential leak is found by visual, olfactory, audible, or other detection method.</p> <p>(NOTE: A leak is detected if an instrument reading of 10,000 ppm or greater is measured.)</p> <p>Verify that, when a leak is detected, the first attempt at repair occurs within 5 days and repair is done within 15 days after discovery.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>4-105.</b> Generators are required to keep specific records pertaining to the valves, pumps, pressure relief devices, and connecting systems being monitored for leaks and submit certain reports (40 CFR 262.34(a)(1)(i), 262.34(a)(1)(ii), 265.1050(b), and 265.1064).</p>	<p>Verify that the following information is maintained in the generators operating record:</p> <ul style="list-style-type: none"> <li>- equipment identification number and hazardous management unit identification</li> <li>- approximate locations</li> <li>- type of equipment</li> <li>- percent-by-weight total organics in the hazardous waste stream at the equipment</li> <li>- hazardous waste state at the equipment (gas, liquid, vapor)</li> <li>- method of compliance</li> <li>- implementation schedule if needed</li> <li>- a performance plan for control devices as needed</li> <li>- documentation of compliance</li> <li>- documentation of repair.</li> </ul> <p>(NOTE: If repairs are made and the control device does not exceed or operate outside of the design specifications for more than 24 h a report to the regional administrator is not required.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>GENERATORS</b></p> <p><b>Containment Buildings</b></p> <p><b>4-106.</b> Generators with containment buildings that are in compliance are not subject to the definition of land disposal if specific requirements are met (40 CFR 262.34(a)(1)(iv) and 265.1100).</p>	<p>(NOTE: According to the Background Information published on page 37211 of the 18 August 1992 edition of the Federal Register, a hazardous waste containment building involves the management of a hazardous waste inside a unit designed and operated to contain the hazardous waste within the unit. This is not a building that holds drums or tanks filled with hazardous waste but a building that holds the hazardous waste itself.)</p> <p>(NOTE: A Generator generates more than 1000 kg [2204.62 lb, 265 gal] of hazardous waste in any one month of a calendar year.)</p> <p>Verify that the containment building meets the following:</p> <ul style="list-style-type: none"> <li>- it is a completely enclosed, self-supporting structure that is designed and constructed of manmade materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit</li> <li>- it is designed to prevent failure due to pressure gradients, settlement, compression or uplift, physical contact with the hazardous wastes, climatic conditions, and the stress of daily operations</li> <li>- it has a primary barrier that is designed to be sufficiently durable to withstand the movement of personnel, wastes, and handling of equipment within the unit</li> <li>- if the unit is used to manage liquids: <ul style="list-style-type: none"> <li>- there is a primary barrier designed and constructed of materials to prevent migration of hazardous constituents into the barrier</li> <li>- there is a liquid collection system designed and constructed of materials to minimize the accumulation of liquid on the primary barrier</li> <li>- there is a secondary containment system designed and constructed of materials to prevent migration of hazardous constituents into the barrier, with a leak detection and liquid collection system capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time</li> </ul> </li> <li>- it has controls sufficient to prevent fugitive dust emissions</li> <li>- it is designed and operated to ensure containment and prevent the tracking of materials from the unit by personnel and equipment.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>4-107.</b> Containment buildings are required to be designed according to specific standards (40 CFR 262.34(a)(1)(iv), 265.1101(a)(1) through 265.1101(a)(2), and 265.1101(b)).</p>	<p>Verify that the containment building meet the following design standards:</p> <ul style="list-style-type: none"> <li>- it is completely enclosed with a floor, walls, and a roof to prevent exposure to the elements and to assure containment of wastes</li> <li>- the floor and containment walls, including any required secondary containment system, are designed and constructed of man-made materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit</li> <li>- it is designed to prevent failure due to pressure gradients, settlement, compression or uplift, physical contact with the hazardous wastes, climatic conditions, and the stress of daily operations</li> <li>- it has sufficient structural strength to prevent collapse or other failure</li> <li>- all surfaces in contact with hazardous wastes are compatible with the wastes</li> <li>- it has a primary barrier that is designed to be sufficiently durable to withstand the movement of personnel, wastes, and handling of equipment within the unit and is appropriate for the chemical and physical characteristics of the waste.</li> </ul> <p>Verify that, if the containment building is going to manage hazardous wastes with free liquids or be treated with free liquids, the following design requirements are also met:</p> <ul style="list-style-type: none"> <li>- there is a primary barrier designed and constructed of materials to prevent migration of hazardous constituents into the barrier (e.g., a geomembrane covered by a concrete wear surface)</li> <li>- there is a liquid collection and removal system designed and constructed of materials to minimize the accumulation of liquid on the primary barrier: <ul style="list-style-type: none"> <li>- the primary barrier is sloped to drain liquids to the associated collection system</li> <li>- liquids and wastes are collected and removed to minimized hydraulic head on the containment system at the earliest practicable time</li> </ul> </li> <li>- there is a secondary containment system, including a secondary barrier, designed and constructed of materials to prevent migration of hazardous constituents into the barrier, with a leak detection and liquid collection system capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time</li> <li>- the leak detection component of the secondary containment system meets the following: <ul style="list-style-type: none"> <li>- it is constructed with a bottom slope of 1 percent or more</li> <li>- it is constructed of a granular drainage materials with a hydraulic conductivity of <math>1 \times 10^{-2}</math> cm/s or more and a thickness of 12 in. (30.5 cm) or more, or constructed of synthetic or geonet drainage materials with a transmissivity of <math>3 \times 10^{-5}</math> m<sup>2</sup>/s or more</li> </ul> </li> </ul>

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<b>4-107. (continued)</b>	<ul style="list-style-type: none"> <li>- if treatment is to be conducted in the building, the treatment area is designed to prevent the release of liquids, wet materials, or liquid aerosols to other portions of the building</li> <li>- the secondary containment system is constructed of materials that are chemically resistant to the waste and liquids managed in the building and of sufficient strength and thickness to prevent collapse under pressure exerted by overlaying materials and by any equipment used.</li> </ul> <p>(NOTE: An exception to the structural strength requirement may be made for light-weight doors and windows based on the nature of the waste management operations if the following criteria are met:</p> <ul style="list-style-type: none"> <li>- the doors and windows provide an effective barrier against fugitive dust emissions</li> <li>- the unit is designed and operated in a manner that ensures the waste will not come in contact with the doors or windows.)</li> </ul> <p>(NOTE: A containment building can serve as an external liner or a secondary containment system for tanks within the building if:</p> <ul style="list-style-type: none"> <li>- it meets the requirements of 265.193(d)(1)</li> <li>- it meets the requirements of 265.193(b), 265.193(c)(1), and 265.193(c)(2)).)</li> </ul>
<p><b>4-108.</b> Containment buildings are required to be operated according to specific standards (40 CFR 262.34(a)(1)(iv), 265.1101(a)(3), 265.1101(c)(1), and 265.1101(c)(4)).</p>	<p>Verify that incompatible wastes or treatment reagents are not placed in the building or its secondary containment system if they could cause the unit or the secondary containment system to leak, corrode, or otherwise fail.</p> <p>Verify that the following operational procedures are done:</p> <ul style="list-style-type: none"> <li>- controls and practices are used to ensure the containment of the waste within the building</li> <li>- the primary barrier is maintained so it is free of significant cracks, gaps, corrosion, or other deterioration that could cause hazardous waste to be released from the primary barrier</li> <li>- the level of the stored/treated hazardous waste is maintained so the height of any containment wall is not exceeded</li> <li>- measures are implemented to prevent the tracking of hazardous waste out of the unit by personnel or equipment used in the handling of the waste</li> <li>- there is a designated area for the decontamination of equipment and collection of rinsate</li> <li>- any collected rinsate is managed as needed according to its constituents</li> <li>- measures are implemented to control fugitive dust emissions so that no openings exhibit visible emissions</li> <li>- particulate collection devices are maintained and operated according to sound air pollution control practices.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<b>4-108. (continued)</b>	<p>Verify that data is gathered from monitoring equipment and leak detection equipment, the site is inspected at least once every 7 days, and the results are recorded in the operating record.</p> <p>Verify that there is a written description of procedures to ensure that waste does not remain in the building for more than 90 days.</p> <p>Verify that there is documentation that the waste does not remain for more than 90 days.</p>
<b>4-109.</b> Containment buildings are required to be certified by a registered professional engineer (40 CFR 262.34(a)(1)(iv) and 265.1101(c)(2)).	<p>Verify that the building has been certified by reviewing the documentation.</p>
<b>4-110.</b> Leaks in containment buildings must be repaired and reported (40 CFR 262.34(a)(1)(iv) and 265.1101(c)(3)).	<p>Verify that, if a condition is detected which could lead to a leak or has already caused a leak, it is repaired promptly.</p> <p>Verify that, when a leak is discovered:</p> <ul style="list-style-type: none"> <li>- the discovery is recorded in the facility operating record</li> <li>- the portion of the containment building that is affected is removed from service</li> <li>- a cleanup and repair schedule is established</li> <li>- within 7 days the regional administrator is notified and within 14 working days written notice is provided to the regional administrator</li> <li>- the regional administrator is notified upon the completion of all repairs, and that certification from a registered professional engineer is also submitted.</li> </ul>
<b>4-111.</b> Containment buildings that contain both areas with and without secondary containment must meet specific requirements (40 CFR 262.34(a)(1)(iv) and 265.110(d)).	<p>Verify that each area is designed and operated according to the appropriate requirements.</p> <p>Verify that measures are taken to prevent the release of liquids or wet materials into areas without secondary containment.</p> <p>Verify that a written description is maintained in the facilities operating log of operating procedures used to maintain the integrity of areas without secondary containment.</p>

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**4-112.** When a containment building is closed, specific requirements must be met (40 CFR 262.34(a)(1)(iv) and 265.1102).

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Determine if the facility has closed a containment building recently.

Verify that, at closure, all waste residues, contaminated containment system components, contaminated subsoils, and structures and equipment contaminated with waste and leachate were removed or decontaminated.

Verify that the containment building is closed in accordance with closure and post-closure requirements for TSDFs as outlined in the sections titled Closure and Documentation Requirements.

Verify that, if it is found that not all contaminated subsoils can be practicably removed or decontaminated, the site is closed and landfill postclosure requirements are implemented.





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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>GENERATORS</b></p> <p><b>Disposal of Restricted Waste</b></p> <p><b>4-113.</b> Facilities that generate hazardous wastes must test their wastes or use process knowledge to determine if the wastes are restricted from land disposal (40 CFR 268.7 (a)).</p> <p><b>4-114.</b> When a generator is managing a restricted waste, a notice must be issued to the TSDF in writing of the appropriate treatment standards and prohibition levels (40 CFR 268.7(a)(1) through 268.7(a)(3)).</p>	<p>(NOTE: See Appendix 4-6 for a summary of recordkeeping and notification requirements.)</p> <p>(NOTE: A Generator generates more than 1000 kg [2204.62 lb, 265 gal] of hazardous waste in any one month of a calendar year.)</p> <p>Determine whether the generator tests for restricted wastes.</p> <p>Determine if the facility generates restricted wastes by reviewing test results (see Appendix 4-7).</p> <p>Verify that, for restricted waste which does not meet the applicable treatment standards or exceeds the applicable prohibition levels, the notice is issued and includes:</p> <ul style="list-style-type: none"> <li>- the USEPA hazardous waste number</li> <li>- waste constituents that the treater will monitor, if monitoring will not include all regulated constituents, for wastes F001-F005, F039, D001, D002, and D012-D043</li> <li>- whether the waste is a nonwastewater or wastewater</li> <li>- the subcategory of the waste</li> <li>- the manifest number associated with the shipment</li> <li>- for hazardous debris, the contaminants subject to treatment, and indication that the contaminants are being treated plus: <ul style="list-style-type: none"> <li>- the USEPA hazardous waste number</li> <li>- waste constituents that the treater will monitor, if monitoring will not include all regulated constituents, for wastes F001-F005, F039, D001, D002, and D012-D043</li> <li>- whether the waste is a nonwastewater or wastewater</li> <li>- the subcategory of the waste.</li> </ul> </li> </ul>

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**4-114. (continued)**

Verify that, for restricted waste which can be land disposed without further treatment (this does not include debris that does not contain hazardous waste), the notice includes:

- the USEPA hazardous waste number
- waste constituents that the treater will monitor, if monitoring will not include all regulated constituents, for wastes F001-F005, F039, D001, D002, and D012-D043
- whether the waste is a nonwastewater or wastewater
- the subcategory of the waste
- the manifest number associated with the shipment
- the waste analysis data, when available
- the signature of an authorized representative certifying that the waste complies with the treatment standards of 40 CFR 268.

Verify that, for restricted waste which is subject to an exemption from a prohibition of the type of land disposal used, the notice states that the waste is not prohibited from land disposal and includes:

- the USEPA hazardous waste number
- waste constituents that the treater will monitor, if monitoring will not include all regulated constituents, for wastes F001 - F005, F039, D001, D002, and D012-D043
- whether the waste is a nonwastewater or wastewater
- the subcategory of the waste
- the manifest number associated with the shipment
- the waste analysis data, when available
- for hazardous debris, the contaminants subject to treatment, and indication that the contaminants are being treated plus:
  - the USEPA hazardous waste number
  - waste constituents that the treater will monitor, if monitoring will not include all regulated constituents, for wastes F001-F005, F039, D001, D002, and D012-D043
  - whether the waste is a nonwastewater or wastewater
  - the subcategory of the waste.

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>4-115.</b> Generators that are managing prohibited wastes in tanks, containers, or containment buildings and treating the waste to meet applicable treatment standards, must develop and follow a written waste analysis plan (40 CFR 268.7(a)(4)).</p>	<p>Verify that the plan describes the procedures the generator will carry out to comply with treatment standards.</p> <p>(NOTE: Generators treating hazardous debris under the alternative treatment standards are not required to conduct waste analysis.)</p> <p>Verify that the plan is kept onsite and:</p> <ul style="list-style-type: none"> <li>- the plan is based on a detailed chemical and physical analysis of a representative sample of the prohibited waste being treated</li> <li>- contains all information necessary to treat the wastes in accordance with regulatory requirements, including the selected testing frequency</li> <li>- the plan is filed with the USEPA regional administrator or state authorized official at least 30 days prior to the treatment activity, with delivery verified.</li> </ul>
<p><b>4-116.</b> Generators are required to keep specific documents pertaining to restricted wastes onsite (40 CFR 268.7(a)(5) through 268.7(a)(7)).</p>	<p>Verify that, if the facility is using generator knowledge to determine whether a waste meets land disposal restriction requirements, the supporting data used in making this determination is retained onsite in the facility files.</p> <p>Verify that, if the facility has determined whether a waste is restricted using appropriate test methods, the waste analysis data is retained onsite.</p> <p>Verify that, if the facility has determined they are managing a restricted waste excluded from the definition of a hazardous waste or solid waste or exempt from RCRA Subtitle C, a one-time notice is placed in the facility's files stating that the generated waste is excluded.</p> <p>Verify that a copy of all notices, certifications, demonstrations, waste analysis data, and other documentation is kept for at least 5 yr from the date the waste was last sent to an onsite or offsite TSDF.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>4-117.</b> Generators who first claim that hazardous debris is excluded from the definition of hazardous waste are required to meet specific notification and certification requirements (40 CFR 268.7 (d)).</p>	<p>Verify that a one-time notification is submitted to the director or authorized state including the following:</p> <ul style="list-style-type: none"> <li>- the name and address of the facility receiving the treated waste</li> <li>- a description of the hazardous debris as initially generated, including the applicable USEPA hazardous waste number</li> <li>- for excluded debris, the technology used to treat the debris.</li> </ul> <p>Verify that the notification is updated if the debris is shipped to a different facility.</p> <p>Verify that, for debris which is excluded, if a different type of debris is treated or if a different technology is used to treat the debris, the notification is updated.</p>
<p><b>4-118.</b> The storage of hazardous waste that is restricted from land disposal is not allowed unless specific conditions are met (40 CFR 268.50).</p>	<p>Verify that land disposal restricted waste is not stored at the facility unless the generator is storing the wastes in tanks, containers, or containment buildings onsite only for the purpose of accumulating enough quantity of hazardous waste to facilitate proper recovery, treatment, or disposal and all appropriate standards for containers, tanks, and containment buildings are met.</p> <p>(NOTE: If the 90-day storage period is exceeded, the generator is required to be permitted as a TSDF.)</p> <p>Verify that transporters do not store manifested shipments of land disposal restricted wastes for more than 10 days.</p> <p>(NOTE: The prohibition on storage does not apply to hazardous wastes that have met treatment standards.)</p> <p>Verify that liquid hazardous wastes containing PCBs at concentrations greater than 50 ppm are stored at a site which meets the requirements of 40 CFR 761.65(b) (see the section titled Special Pollutants Management) and is removed from storage within 1 yr of the date it was first placed into storage.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>TRANSPORTATION OF HAZARDOUS WASTE</b></p> <p><b>4-119.</b> Transporters of hazardous waste that is required to be manifested must have a USEPA identification number and must comply with manifest management requirements (40 CFR 263.10(a), 263.10(b), 263.11, 263.20(a) through 263.20(d), 263.21, and 263.22(a)).</p> <p><b>4-120.</b> Before transporting hazardous waste or offering hazardous waste for transportation offsite in the United States, the facility must package and label the waste in accordance with DOT regulations contained in 49 CFR 172, 173, 178, and 179 (40 CFR 262.30 through 262.33).</p>	<p>(NOTE: These requirements do not apply to the onsite transportation of hazardous waste. Nor do they apply to CESQGs.)</p> <p>Determine if the facility transports hazardous waste offsite using its vehicles or a contractor.</p> <p>Verify that the transporter has a USEPA identification number.</p> <p>Verify that all waste accepted, transported, or offered for transport is accompanied by a manifest.</p> <p>Verify that, prior to transport, the transporter signs and dates the manifest and returns a copy to the generator prior to leaving the facility.</p> <p>Verify that, if the facility is transporter, a copy of the manifest is retained after delivery.</p> <p>Verify that manifests are kept on file for 3 yr.</p> <p>(NOTE: Special issues involved in the transportation of hazardous waste by air, rail, or water are not addressed in this guide.)</p> <p>Determine what pretransport procedures for hazardous waste are used.</p> <p>Verify that containers are properly constructed and contain no leaks, corrosion, or bulges by inspecting a sample of containers awaiting transport.</p> <p>Examine end-seams for minor weeping that indicates drum failure.</p> <p>Verify that labeling and marking on each container is appropriate for the contents.</p> <p>Verify that the following information is displayed on a random sample of containers of 110 gal [416.40 L] or less in accordance with 49 CFR 172.304:</p> <p><b>HAZARDOUS WASTE FEDERAL LAW PROHIBITS IMPROPER DISPOSAL. IF FOUND, CONTACT THE NEAREST POLICE OR PUBLIC SAFETY AUTHORITY OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY.</b></p> <ul style="list-style-type: none"> <li>- GENERATOR'S NAME AND ADDRESS</li> <li>- MANIFEST DOCUMENT NUMBER_____.</li> </ul> <p>Verify that proper DOT placarding is available for the transporter.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>4-121.</b> Transporters of waste offsite must take immediate notification and cleanup action if a discharge occurs during transport (40 CFR 263.30 and 263.31).</p>	<p>Verify that facility transport operators have instructions to notify local authorities and take cleanup action so the discharge does not present a hazard.</p> <p>Verify that facility transporters give notice to the NRC and report in writing as required by 49 CFR 171.15 and 171.16.</p>
<p><b>4-122.</b> The facility should ensure that transportation of hazardous wastes between buildings is accomplished in accordance with good management practices to help prevent spills, releases, and accidents (MP).</p>	<p>Determine if procedures exist to manage movement of hazardous wastes throughout the facility.</p> <p>Determine if drivers are trained in spill control procedures.</p> <p>Determine if provisions have been made for securing wastes in vehicles when transporting.</p>
<p><b>4-123.</b> Transporters must not store manifested shipments in containers meeting DOT packaging requirements for more than 10 days at a transfer facility (40 CFR 263.12).</p>	<p>Determine if the facility has a transfer facility.</p> <p>Verify the following:</p> <ul style="list-style-type: none"> <li>- transfer facility storage is for 10 days or less</li> <li>- DOT packaging requirements are met</li> <li>- shipments are manifested and manifests accompany shipments</li> <li>- storage is consistent with good management practices.</li> </ul> <p>(NOTE: Storage for more than 10 days will require a TSDF permit.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>SMALL QUANTITY UNIVERSAL WASTE HANDLERS</b></p> <p>General</p> <p><b>4-124.</b> Small quantity handlers of universal waste, less than 5000 kg [11,111 lb] at any time, are prohibited from disposing or treating universal wastes (40 CFR 273.11).</p> <p><b>4-125.</b> Small quantity handlers of universal waste are required to meet specific accumulation time limits (40 CFR 273.15).</p>	<p>(NOTE: The following waste may, at the option of the generator, be managed under the requirements of 40 CFR 273:</p> <ul style="list-style-type: none"> <li>- household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined at 273.6</li> <li>- conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)</li> </ul> <p>(NOTE: When the following wastes are commingled with universal wastes, the commingled wastes must be managed under 40 CFR 273 as universal waste:</p> <ul style="list-style-type: none"> <li>- household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined at 273.6</li> <li>- conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)</li> </ul> <p>Determine if the facility is a small quantity handler of universal waste.</p> <p>Verify that the facility does not dispose of universal wastes onsite.</p> <p>Verify that, except when responding to a release or performing waste management activities outlined in 40 CFR 273.13 (see checklist items 4-124 through 4-128), the facility does not dilute or treat universal waste.</p> <p>Verify that universal waste is not accumulated for more than 1 yr from the date that the universal waste is generated, or received from another handler.</p> <p>(NOTE: The 1 yr limit may be exceeded if the cause is waiting for the accumulation of quantities necessary to facilitate proper recovery, treatment, or disposal</p>





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<b>SMALL QUANTITY UNIVERSAL WASTE HANDLERS</b>	(NOTE: The following waste may, at the option of the generator, be managed under the requirements of 40 CFR 273: - household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined at 273.6 - conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)
<b>Specific Wastes</b>	(NOTE: When the following wastes are commingled with universal wastes, the commingled wastes must be managed under 40 CFR 273 as universal waste: - household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined at 273.6 - conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)
<b>4-127.</b> Small quantity handlers of universal waste are required to manage universal waste batteries according to specific parameters (40 CFR 273.12, 273.13(a)(1) and 273.13(a)(2)).	(NOTE: A small quantity handler of universal waste is not required to notify the USEPA of universal waste handling activities.)  (NOTE: Refer to the definition of "battery" and "waste battery".)  Verify that universal waste batteries are managed in a way that prevents releases of any universal waste or component of a universal waste to the environment.  Verify that batteries which show evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable condition are contained in a container.  Verify that containers are closed, structurally sound, compatible with the contents of the battery, and lack evidence of leakage, spillage or damage that could cause leakage.  Verify that when conducting any of the following activities the casing of each individual battery cell is not breached and remains intact and closed:  - sorting batteries by type - mixing battery types in one container - discharging batteries so as to remove the electric charge - regenerating used batteries - disassembling batteries or battery packs into individual batteries or cells - removing batteries from consumer products - removing electrolyte from batteries.

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>4-127. (continued)</b></p> <p><b>4-128.</b> Small quantity handlers of universal waste are required to manage the electrolyte from universal waste batteries according to specific parameters (40 CFR 273.12 and 273.13(a)(3)).</p> <p><b>4-129.</b> Small quantity handlers of universal waste are required to manage universal waste pesticides according to specific parameters (40 CFR 273.12 and 273.13(b)).</p>	<p>(NOTE: Cells may be opened to remove electrolyte but must be immediately closed after removal.)</p> <p>Verify that if the small quantity universal waste handler removes electrolyte from batteries or generates other solid waste (e.g. battery pack materials, discarded consumer products) as a result of battery management activities, the handler determines if any of the wastes exhibit the characteristics of a hazardous waste.</p> <p>Verify that if it does exhibit the characteristics of a hazardous waste, it is treated and handled as a hazardous waste.</p> <p>Verify that if the electrolyte or other solid waste is not a hazardous waste, it is managed in accordance with any other applicable state and federal laws and regulations.</p> <p>(NOTE: A small quantity handler of universal waste is not required to notify the USEPA of universal waste handling activities.)</p> <p>(NOTE: Refer to the definition of "pesticide" and "waste pesticides".)</p> <p>Verify that universal waste pesticides are managed in a way that prevents releases of any universal waste or component of a universal waste to the environment.</p> <p>Verify that the pesticides are contained in one or more of the following:</p> <ul style="list-style-type: none"> <li>- a container that remains closed, structurally sound, compatible with the pesticide, and that lacks evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions</li> <li>- an inappropriate container that is overpacked in an appropriate container</li> <li>- a tank that meets the requirements of 40 CFR part 265, Subpart J except for 265.197(c) (tank closure plans), 265.200 (waste analysis and trial tests), and 265.201 (requirements for SQGs)</li> <li>- a transport vehicle or vessel that is closed, structurally sound, compatible with the pesticide, and that lacks evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>4-130.</b> Small quantity handlers of universal waste are required to manage universal waste thermostats according to specific parameters (40 CFR 273.12 and 273.13(c)).</p>	<p>(NOTE: A small quantity handler of universal waste is not required to notify the USEPA of universal waste handling activities.)</p> <p>(NOTE: Refer to the definition of "thermostat" and "waste thermostat".)</p> <p>Verify that universal waste thermostats are managed in a way that prevents releases of any universal waste or component of a universal waste to the environment.</p> <p>Verify that the thermostats are contained in a container that remains closed, structurally sound, compatible with the pesticide, and that lacks evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.</p> <p>Verify that if the handler removes the mercury containing ampules, the following are met:</p> <ul style="list-style-type: none"> <li>- the ampules are removed in a manner designed to prevent breakage of the ampule</li> <li>- ampules are removed only over, or in, a containment device</li> <li>- a mercury cleanup system is readily available to immediately transfer any mercury spills or leaks from the containment device to an appropriate container</li> <li>- there is immediate transfer of any mercury spills or leaks from broken ampules to an appropriate container</li> <li>- the area in which ampules are removed is well ventilated and monitored to ensure compliance with OSHA</li> <li>- employees removing ampules are thoroughly familiar with proper waste mercury handling and emergency procedures</li> <li>- removed ampules are stored in closed, non-leaking containers that are in good condition</li> <li>- removed ampules are packed in the container with packing materials adequate to prevent breakage during storing, handling, and transportation.</li> </ul>

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**4-131.** Small quantity handlers of universal waste are required to manage the wastes from universal waste thermostats according to specific parameters (40 CFR 273.12 and 273.13(c)(3)).

Verify that if the small quantity universal waste handler removes mercury containing ampules, the handler determines if the mercury or cleanup residues resulting from spills or leaks exhibit the characteristics of a hazardous waste.

Verify that if the small quantity universal waste handler removes mercury containing ampules, the handler determines if the solid waste generated (e.g. remaining thermostat units) exhibit the characteristics of a hazardous waste.

Verify that if it does exhibit the characteristics of a hazardous waste is treated and handled as a hazardous waste.

Verify that if the mercury, residues, or other solid waste is not a hazardous waste, it is managed in accordance with any other applicable state and federal laws and regulations.

[illegible]



<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS WASTE MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<b>SMALL QUANTITY UNIVERSAL WASTE HANDLERS</b>  <b>Containers</b>	<p>(NOTE: The following waste may, at the option of the generator, be managed under the requirements of 40 CFR 273:</p> <ul style="list-style-type: none"> <li>- household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined at 273.6</li> <li>- conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)</li> </ul> <p>(NOTE: When the following wastes are commingled with universal wastes, the commingled wastes must be managed under 40 CFR 273 as universal waste:</p> <ul style="list-style-type: none"> <li>- household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined at 273.6</li> <li>- conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)</li> </ul> <p>4-133. Universal wastes are required to be labeled according to specific parameters (40 CFR 273.14).</p> <p>Verify that universal waste batteries (each battery), or a container in which the batteries are contained, are labeled or marked clearly with any one of the following phrases:</p> <ul style="list-style-type: none"> <li>- UNIVERSAL WASTE - BATTERY(IES)</li> <li>- WASTE BATTERY(IES)</li> <li>- USED BATTERY(IES).</li> </ul> <p>Verify that containers or multiple container package units, tanks, transport vehicles or vessels in which recalled universal waste pesticides are contained are marked clearly with:</p> <ul style="list-style-type: none"> <li>- the label that was on or accompanied the product as sold or distributed</li> <li>- the words UNIVERSAL WASTE PESTICIDE(S) or WASTE PESTICIDE(s).</li> </ul> <p>Verify that the container, tanks, or transport vehicles or vessels in which unused pesticide products are contained are labeled or marked clearly with:</p> <ul style="list-style-type: none"> <li>- the label that was on the product when purchased, if still legible, or, if this is not feasible, the appropriate DOT label</li> <li>- an alternate label prescribed or designated by the waste pesticide collection program administered or recognized by a state</li> <li>- the words UNIVERSAL WASTE - PESTICIDE(S) or WASTE PESTICIDE(S).</li> </ul>

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**4-133. (continued)**

Verify that universal waste thermostats or containers in which the thermostats are contained are labeled or marked clearly with one of the following phrases:

- UNIVERSAL WASTE - MERCURY THERMOSTAT(S)
- WASTE MERCURY THERMOSTAT(S)
- USED MERCURY THERMOSTAT(S).



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>SMALL QUANTITY UNIVERSAL WASTE HANDLERS</b></p> <p><b>Transportation</b></p> <p><b>4-134.</b> Offsite shipments of universal waste from small quantity handlers is required to be done according to specific parameters (40 CFR 273.18 and 273.19).</p>	<p>(NOTE: The following waste may, at the option of the generator, be managed under the requirements of 40 CFR 273:</p> <ul style="list-style-type: none"> <li>- household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined at 273.6</li> <li>- conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)</li> </ul> <p>(NOTE: When the following wastes are commingled with universal wastes, the commingled wastes must be managed under 40 CFR 273 as universal waste:</p> <ul style="list-style-type: none"> <li>- household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined at 273.6</li> <li>- conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)</li> </ul> <p>Verify that small quantity handlers of universal waste do not send or take universal waste to anyplace other than another universal waste handler, a destination facility, or a foreign destination.</p> <p>(NOTE: If the handler self-transportes universal waste, they have to comply with the requirements for transportation in 40 CFR 273.50 through 273.56 (see checklist items 4-100 through 4-105).)</p> <p>Verify that if the universal waste being offered for offsite transportation meets the definition of hazardous materials under 49 CFR parts 171 through 180, it is placarded, packaged and shipped according to DOT requirements.</p> <p>Verify that prior to sending the waste offsite, the originating handler has ensured that the receiving handler agrees to receive the waste.</p> <p>Verify that if the receiving handler rejects a waste shipment, the originating handler does one of the following:</p> <ul style="list-style-type: none"> <li>- receives the waste back when notified the shipment was rejected</li> <li>- agrees with the receiving handler on a destination facility to which the shipment will be sent.</li> </ul> <p>Verify that if the receiving handler rejects a shipment, the receiving handler notifies the originating handler.</p> <p>Verify that if a small quantity handler of universal waste receives a shipment containing hazardous waste that is not universal waste, the handler immediately notifies the regional USEPA office of the illegal shipment and provides the name, phone numbers, and address of the originating shipper.</p>

REGULATORY REQUIREMENTS:	REVIEWER CHECKS: July 1995
4-134. (continued)	<p>(NOTE: If the handler receives a shipment of non-hazardous non-universal waste the handler may manage the waste in any way that is in compliance with federal, state, or local regulations.)</p> <p>(NOTE: A small quantity handler of universal waste is not required to keep records of shipments of universal waste.)</p>
4-135. Small quantity handlers of universal waste that send universal waste to a foreign destination are required to meet specific requirements (40 CFR 273.20).	<p>Verify that the requirements in 40 CFR 262.53 (notification of intent to export), 262.56(a)(1) through (a)(4), (6) and (b) (annual reports), and 262.57 (recordkeeping) are met.</p> <p>Verify that the receiving country has consented to accept the waste through an Acknowledgment of Consent.</p> <p>Verify that a copy of the Acknowledgment of Consent is provided to the USEPA.</p>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>LARGE QUANTITY UNIVERSAL WASTE HANDLER</b></p> <p><b>General</b></p> <p><b>4-136.</b> Large quantity handlers of universal waste, more than 5000 kg [11,111 lb] at any time, are prohibited from disposing or treating universal wastes (40 CFR 273.31).</p>	<p>(NOTE: The following waste may, at the option of the generator, be managed under the requirements of 40 CFR 273:</p> <ul style="list-style-type: none"> <li>- household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined at 273.6</li> <li>- conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)</li> </ul> <p>(NOTE: When the following wastes are commingled with universal wastes, the commingled wastes must be managed under 40 CFR 273 as universal waste:</p> <ul style="list-style-type: none"> <li>- household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined at 273.6</li> <li>- conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)</li> </ul> <p>Determine if the facility is a large quantity handler of universal waste.</p> <p>Verify that the facility does not dispose of universal wastes onsite.</p> <p>Verify that, except when responding to a release or performing waste management activities outlined in 40 CFR 273.13 (see checklist items 4-127 through 4-131), the facility does not dilute or treat universal waste.</p>

**COMPLIANCE CATEGORY:**  
**HAZARDOUS WASTE MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>4-137.</b> Large quantity handlers of universal waste are required to meet specific accumulation time limits (40 CFR 273.35).</p>	<p>Verify that universal waste is not accumulated for more than 1 yr from the date that the universal waste is generated, or received from another handler.</p> <p>(NOTE: The one yr limit may be exceeded if the cause is waiting for the accumulation of quantities necessary to facilitate proper recovery, treatment, or disposal</p> <p>Verify that the handler can demonstrate the length of time that the universal waste has been accumulated by one of the following methods:</p> <ul style="list-style-type: none"> <li>- placing the universal waste in a container and marking or labeling the container with the earliest date that any universal waste in the container became a waste or was received</li> <li>- marking or labeling each individual item of universal waste with the date it became waste or was received</li> <li>- maintaining an inventory system onsite that identifies the date each universal waste became a waste or was received</li> <li>- maintaining an inventory system onsite that identifies the earliest date that any universal waste in a group of universal waste items or a group of containers of universal waste became a waste or was received</li> <li>- placing the universal waste in a specific accumulation area and identifying the earliest date that any universal waste in the area became a waste or was received</li> <li>- any other method which clearly demonstrates the length of time that the universal waste has been accumulated from the date that it becomes a waste or was received.</li> </ul>
<p><b>4-138.</b> Large quantity handlers of universal waste are required to handle releases according to specific procedures (40 CFR 273.37).</p>	<p>Verify that all releases of universal waste and other universal waste residues are immediately contained.</p> <p>Verify that the facility determines if the material resulting from the release is a hazardous waste.</p>

<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS WASTE MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<b>LARGE QUANTITY UNIVERSAL WASTE HANDLERS</b>  <b>Specific Wastes</b>	<p>(NOTE: The following waste may, at the option of the generator, be managed under the requirements of 40 CFR 273:</p> <ul style="list-style-type: none"> <li>- household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined at 273.6</li> <li>- conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)</li> </ul> <p>(NOTE: When the following wastes are commingled with universal wastes, the commingled wastes must be managed under 40 CFR 273 as universal waste:</p> <ul style="list-style-type: none"> <li>- household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined at 273.6</li> <li>- conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)</li> </ul> <p>(NOTE: Refer to the definition of "battery" and "waste battery".)</p> <p>Verify that universal waste batteries are managed in a way that prevents releases of any universal waste or component of a universal waste to the environment.</p> <p>Verify that batteries that show evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable condition are contained in a container.</p> <p>Verify that containers are closed, structurally sound, compatible with the contents of the battery, and lack evidence of leakage, spillage or damage that could cause leakage.</p> <p>Verify that when conducting any of the following activities the casing of each individual battery cell is not breached and remains intact and closed:</p> <ul style="list-style-type: none"> <li>- sorting batteries by type</li> <li>- mixing battery types in one container</li> <li>- discharging batteries so as to remove the electric charge</li> <li>- regenerating used batteries</li> <li>- disassembling batteries or battery packs into individual batteries or cells</li> <li>- removing batteries from consumer products</li> <li>- removing electrolyte from batteries.</li> </ul> <p>(NOTE: Cells may be opened to remove electrolyte but must be immediately closed after removal.)</p>
<p><b>4-139.</b> Large quantity handlers of universal waste are required to manage universal waste batteries according to specific parameters (40 CFR 273.33(a)(1) and 273.33(a)(2)).</p>	

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>4-140.</b> Large quantity handlers of universal waste are required to manage the electrolyte from universal waste batteries according to specific parameters (40 CFR 273.33(a)(3)).</p>	<p>Verify that if the large quantity universal waste handler removes electrolyte from batteries or generates other solid waste (e.g. battery pack materials, discarded consumer products) as a result of battery management activities, the handler determines if any of the wastes exhibit the characteristics of a hazardous waste.</p> <p>Verify that if it does exhibit the characteristics of a hazardous waste, it is treated and handled as a hazardous waste.</p> <p>Verify that if the electrolyte or other solid waste is not a hazardous waste, it is managed in accordance with any other applicable state and federal laws and regulations.</p>
<p><b>4-141.</b> Large quantity handlers of universal waste are required to manage universal waste pesticides according to specific parameters (40 CFR 273.33(b)).</p>	<p>(NOTE: Refer to the definition of "pesticide" and "waste pesticides".)</p> <p>Verify that universal waste pesticides are managed in a way that prevents releases of any universal waste or component of a universal waste to the environment.</p> <p>Verify that the pesticides are contained in one or more of the following:</p> <ul style="list-style-type: none"> <li>- a container that remains closed, structurally sound, compatible with the pesticide, and lacks evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions</li> <li>- an inappropriate container that is overpacked in an appropriate container</li> <li>- a tank that meets the requirements of 40 CFR part 265, Subpart J except for 265.197(c) (tank closure plans), 265.200 (waste analysis and trial tests), and 265.201 (requirements for SQGs)</li> <li>- a transport vehicle or vessel that is closed, structurally sound, compatible with the pesticide, and that lacks evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.</li> </ul>
<p><b>4-142.</b> Large quantity handlers of universal waste are required to manage universal waste thermostats according to specific parameters (40 CFR 273.33(c)(1) and 273.33(c)(2)).</p>	<p>(NOTE: Refer to the definition of "thermostat" and "waste thermostat".)</p> <p>Verify that universal waste thermostats are managed in a way that prevents releases of any universal waste or component of a universal waste to the environment.</p> <p>Verify that the thermostats are contained in a container that remains closed, structurally sound, compatible with the pesticide, and that lacks evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<b>4-142. (continued)</b>	<p>Verify that if the handler removes the mercury containing ampules, the following are met:</p> <ul style="list-style-type: none"> <li>- the ampules are removed in a manner designed to prevent breakage of the ampule</li> <li>- ampules are removed only over, or in, a containment device</li> <li>- a mercury cleanup system is readily available to immediately transfer any mercury spills or leaks from the containment device to an appropriate container</li> <li>- there is immediate transfer of any mercury spills or leaks from broken ampules to an appropriate container</li> <li>- the area in which ampules are removed is well ventilated and monitored to ensure compliance with OSHA</li> <li>- employees removing ampules are thoroughly familiar with proper waste mercury handling and emergency procedures</li> <li>- removed ampules are stored in closed, non-leaking containers that are in good condition</li> <li>- removed ampule are packed in the container with packing materials adequate to prevent breakage during storing, handling, and transportation.</li> </ul>
<p><b>4-143.</b> Large quantity handlers of universal waste are required to manage the wastes from universal waste thermostats according to specific parameters (40 CFR 273.33(c)(3)).</p>	<p>Verify that if the large quantity universal waste handler removes mercury containing ampules, the handler determines if the mercury or cleanup residues resulting from spills or leaks exhibits the characteristics of a hazardous waste.</p> <p>Verify that if the large quantity universal waste handler removes mercury containing ampules, the handler determines if the solid waste generated (e.g. remaining thermostat units) exhibits the characteristics of a hazardous waste.</p> <p>Verify that if it does exhibit the characteristics of a hazardous waste is treated and handled as a hazardous waste.</p> <p>Verify that if the mercury, residues, or other solid waste is not a hazardous waste, it is managed in accordance with any other applicable state and federal laws and regulations.</p>





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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<b>LARGE QUANTITY UNIVERSAL WASTE HANDLERS</b>  <b>Personnel Training</b>	<p>(NOTE: The following waste may, at the option of the generator, be managed under the requirements of 40 CFR 273:</p> <ul style="list-style-type: none"> <li>- household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined at 273.6</li> <li>- conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)</li> </ul> <p>(NOTE: When the following wastes are commingled with universal wastes, the commingled wastes must be managed under 40 CFR 273 as universal waste:</p> <ul style="list-style-type: none"> <li>- household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined at 273.6</li> <li>- conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)</li> </ul> <p>4-144. Employees who handle or have responsibility for managing universal wastes are required to be trained (40 CFR 273.36)</p> <p>Verify that employees have been trained in the proper handling and emergency response procedures.</p>



<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS WASTE MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<b>LARGE QUANTITY UNIVERSAL WASTE HANDLERS</b>  <b>Containers</b>	<p>(NOTE: The following waste may, at the option of the generator, be managed under the requirements of 40 CFR 273:</p> <ul style="list-style-type: none"> <li>- household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined at 273.6</li> <li>- conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)</li> </ul> <p>(NOTE: When the following wastes are commingled with universal wastes, the commingled wastes must be managed under 40 CFR 273 as universal waste:</p> <ul style="list-style-type: none"> <li>- household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined at 273.6</li> <li>- conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)</li> </ul> <p>4-145. Universal wastes are required to be labeled according to specific parameters (40 CFR 273.34).</p> <p>Verify that universal waste batteries (each battery), or a container in which the batteries are contained, are labeled or marked clearly with any one of the following phrases:</p> <ul style="list-style-type: none"> <li>- UNIVERSAL WASTE - BATTERY(IES)</li> <li>- WASTE BATTERY(IES)</li> <li>- USED BATTERY(IES).</li> </ul> <p>Verify that containers or multiple container package units, tanks, transport vehicles or vessels in which recalled universal waste pesticides are contained are marked clearly with:</p> <ul style="list-style-type: none"> <li>- the label that was on or accompanied the product as sold or distributed</li> <li>- the words UNIVERSAL WASTE PESTICIDE(S) or WASTE PESTICIDE(S).</li> </ul> <p>Verify that the container, tanks, or transport vehicles or vessels in which unused pesticide products are contained are labeled or marked clearly with:</p> <ul style="list-style-type: none"> <li>- the label that was on the product when purchased, if still legible, or, if this is not feasible, the appropriate DOT label</li> <li>- an alternate label prescribed or designated by the waste pesticide collection program administered or recognized by a state</li> <li>- the words UNIVERSAL WASTE - PESTICIDE(S) or WASTE PESTICIDE(S).</li> </ul>

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**4-145. (continued)**

Verify that universal waste thermostats or containers in which the thermostats are contained are labeled or marked clearly with one of the following phrases:

- UNIVERSAL WASTE - MERCURY THERMOSTAT(S)
- WASTE MERCURY THERMOSTAT(S)
- USED MERCURY THERMOSTAT(S).

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>LARGE QUANTITY UNIVERSAL WASTE HANDLERS</b></p> <p><b>Notification</b></p> <p><b>4-146.</b> Large quantity handlers of universal waste are required to perform specific notification activities (40 CFR 273.32).</p>	<p>(NOTE: The following waste may, at the option of the generator, be managed under the requirements of 40 CFR 273:</p> <ul style="list-style-type: none"> <li>- household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined at 273.6</li> <li>- conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)</li> </ul> <p>(NOTE: When the following wastes are commingled with universal wastes, the commingled wastes must be managed under 40 CFR 273 as universal waste:</p> <ul style="list-style-type: none"> <li>- household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined at 273.6</li> <li>- conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)</li> </ul> <p>Verify that the handler has sent written notification of universal waste management to the Regional Administrator and received an USEPA identification number before meeting or exceeding the 5000 kg (11,111 lb) storage limit.</p> <p>(NOTE: In the following circumstances, the handler is not required to notify the USEPA:</p> <ul style="list-style-type: none"> <li>- the handler has already notified the USEPA of hazardous waste activity,</li> <li>- recalled pesticides are being managed and notification has already been sent in under 40 CFR 165.)</li> </ul> <p>Verify that the notification includes:</p> <ul style="list-style-type: none"> <li>- the universal waste handlers name and mailing address</li> <li>- the name and business phone of the POC at the facility</li> <li>- the address or physical location of the universal waste management activities</li> <li>- a list of all types of universal waste managed by the handler</li> <li>- a statement indicating that the handler is accumulating more than 5000 kg [11,111 lb] of universal waste at one time and the types of universal waste that are accumulated above this quantity.</li> </ul>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>LARGE QUANTITY UNIVERSAL WASTE HANDLERS</b></p> <p><b>Transportation</b></p> <p><b>4-147.</b> Offsite shipments of universal waste from large quantity handlers is required to be done according to specific parameters (40 CFR 273.38).</p>	<p>(NOTE: The following waste may, at the option of the generator, be managed under the requirements of 40 CFR 273:</p> <ul style="list-style-type: none"> <li>- household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined at 273.6</li> <li>- conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)</li> </ul> <p>(NOTE: When the following wastes are commingled with universal wastes, the commingled wastes must be managed under 40 CFR 273 as universal waste:</p> <ul style="list-style-type: none"> <li>- household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined at 273.6</li> <li>- conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)</li> </ul> <p>Verify that large quantity handlers of universal waste do not send or take universal waste to anyplace other than another universal waste handler, a destination facility, or a foreign destination.</p> <p>(NOTE: If the handler self-transportes universal waste, they have to comply with the requirements for transportation in 40 CFR 273.50 through 273.56 (see checklist items 4-103 through 4-108).)</p> <p>Verify that if the universal waste being offered for offsite transportation meets the definition of hazardous materials under 49 CFR parts 171 through 180, it is placarded, packaged and shipped according to DOT requirements.</p> <p>Verify that prior to sending the waste offsite, the originating handler has ensured that the receiving handler agrees to receive the waste.</p> <p>Verify that if the receiving handler rejects a waste shipment, the originating handler does one of the following:</p> <ul style="list-style-type: none"> <li>- receives the waste back when notified the shipment was rejected</li> <li>- agrees with the receiving handler on a destination facility to which the shipment will be sent.</li> </ul> <p>Verify that if the receiving handler rejects a shipment, the receiving handler notifies the originating handler.</p> <p>Verify that if a large quantity handler of universal waste receives a shipment containing hazardous waste that is not universal waste, the handler immediately notifies the regional USEPA office of the illegal shipment and provides the name, phone numbers, and address of the originating shipper.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<b>4-147. (continued)</b>	<p>(NOTE: If the handler receives a shipment of non-hazardous non-universal waste the handler may manage the waste in any way that is in compliance with federal, state, or local regulations.)</p>
<b>4-148.</b> Large quantity handlers are required to track offsite shipments (40 CFR 273.39).	<p>Verify that a record of each shipment of universal waste received at the facility is kept in one of the following:</p> <ul style="list-style-type: none"> <li>- a log</li> <li>- invoices</li> <li>- manifests</li> <li>- bill of lading</li> <li>- other shipping document.</li> </ul> <p>Verify that the record for each shipment received includes the following:</p> <ul style="list-style-type: none"> <li>- name and address of the originating handler or foreign shipper from who the waste was sent</li> <li>- the quantity of each type of universal waste received</li> <li>- the date of receipt of the shipment.</li> </ul> <p>Verify that a record of each shipment of universal waste shipped offsite is kept in one of the following:</p> <ul style="list-style-type: none"> <li>- a log</li> <li>- invoices</li> <li>- manifests</li> <li>- bill of lading</li> <li>- other shipping document.</li> </ul> <p>Verify that the record for each offsite shipment includes the following:</p> <ul style="list-style-type: none"> <li>- name and address of the handler, destination facility, or foreign destination to whom the universal waste was sent</li> <li>- the quantity of each type of universal waste shipped</li> <li>- the date the shipment left the facility.</li> </ul> <p>Verify that records are retained for 3 yr from the date of receipt of a shipment of universal waste.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>4-149.</b> Large quantity handlers of universal waste that send universal waste to a foreign destination are required to meet specific requirements (40 CFR 273.20).</p>	<p>Verify that the requirements in 40 CFR 262.53 (notification of intent to export), 262.56(a)(1) through (a)(4), (6) and (b) (annual reports), and 262.57 (recordkeeping) are met.</p> <p>Verify that the receiving country has consented to accept the waste through an Acknowledgment of Consent.</p> <p>Verify that a copy of the Acknowledgment of Consent is provided to the USEPA.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>UNIVERSAL WASTE TRANSPORTERS</b></p> <p><b>4-150.</b> Universal waste transporters are prohibited from disposing or treating universal wastes (40 CFR 273.51).</p> <p><b>4-151.</b> Universal waste transporters are required to manage the waste they transport according to specific parameters (40 CFR 273.52).</p> <p><b>4-152.</b> Universal waste transporters may only store the universal waste at a transfer facility for 10 days (40 CFR 273.53).</p> <p><b>4-153.</b> Universal waste transporters are required to handle releases according to specific procedures (40 CFR 273.54).</p> <p><b>4-154.</b> Offsite shipments of universal waste transporters are required to be done according to specific parameters (40 CFR 273.18 and 273.19).</p>	<p>Determine if the facility is a transporter of universal waste.</p> <p>Verify that the facility does not dispose of universal wastes onsite.</p> <p>Verify that, except when responding to a release or performing waste management activities outlined in 40 CFR 273.13 (see checklist items 4-127 through 4-131), the facility does not dilute or treat universal waste.</p> <p>Verify that the waste is managed according to applicable DOT regulations depending on whether it meets the criteria for definition as a hazardous material or as a hazardous waste.</p> <p>Verify that universal waste is not stored at a transfer facility for more than 10 days.</p> <p>(NOTE: If the waste is stored for more than 10 days, the transporter becomes a handler.)</p> <p>Verify that all releases of universal waste and other universal waste residues are immediately contained.</p> <p>Verify that the transporter determines if the material resulting from the release is a hazardous waste.</p> <p>Verify that transporters of universal waste do not send or take universal waste to anyplace other than a universal waste handler, a destination facility, or a foreign destination.</p> <p>Verify that if the universal waste being offered for offsite transportation meets the definition of hazardous materials under 49 CFR parts 171 through 180, it is placarded, packaged and shipped according to DOT requirements.</p>

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**4-155.** Transporters of universal waste that send universal waste to a foreign destination is required to meet specific requirements (40 CFR 273.56).

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Verify that the transporter has determined that the shipment conforms to the USEPA Acknowledgment of Consent.

Verify that a copy of the USEPA Acknowledgment of Consent accompanies the shipment.

Verify that appropriate measures are taken to ensure the universal waste is delivered to the facility designated by the person initiating the shipment.

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>UNIVERSAL WASTE DESTINATION FACILITIES</b></p> <p><b>4-156.</b> Destination facilities which recycle a particular universal waste without storing the universal waste prior to recycling are required to meet specific requirements (40 CFR 273.60).</p> <p><b>4-157.</b> Destination facilities are required to meet specific standards in relation to off-site shipments of universal waste (40 CFR 273.61).</p>	<p>(NOTE: A destination facility has to meet all the applicable requirements in 40 CFR parts 264, 265, 266, 270, and 124 in addition to the requirements outlined here.)</p> <p>Verify that the facility meets the following requirements:</p> <ul style="list-style-type: none"> <li>- notification requirements under Section 3010 of RCRA</li> <li>- 40 CFR 265.71 and 265.72 concerning manifests</li> <li>- 40 CFR 264.1030 through 264.1049 or 265.1030 through 265.1049 concerning air emissions from process vents (see checklist items 4-95 through 4-97)</li> <li>- 40 CFR 264.1050 through 264.1079 or 265.1050 through 265.1079 concerning air emission standards for equipment leaks (see checklist items 4-98 through 4-105).</li> </ul> <p>Verify that the destination facility does not send or take universal waste to a place other than a universal waste handler, another destination facility, or foreign destination.</p> <p>Verify that if the destination facility reject a shipment or portion of a shipment, they contact the shipper to notify him of the rejection and discuss reshipment of the load.</p> <p>Verify that the destination facility does one of the following:</p> <ul style="list-style-type: none"> <li>- sends the shipment back to the original shipper</li> <li>- sends the shipment to another destination facility if agreed upon by the shipper and the holding destination facility.</li> </ul> <p>Verify that if a destination facility receives a shipment containing hazardous waste that is not universal waste, the facility immediately notifies the regional USEPA office of the illegal shipment and provides the name, phone numbers, and address of the originating shipper.</p> <p>(NOTE: If the facility receives a shipment of non-hazardous non-universal waste the facility may manage the waste in any way that is in compliance with federal, state, or local regulations.)</p>

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**4-158.** Destination facilities are required to track universal waste shipments (40 CFR 273.62).

Verify that a record of each shipment of universal waste received at the facility is kept in one of the following:

- a log
- invoices
- manifests
- bill of lading
- other shipping document.

Verify that the record for each shipment received includes the following:

- name and address of the originating handler or foreign source from who the waste was sent
- the quantity of each type of universal waste received
- the date of receipt of the shipment.

Verify that records are retained for 3 yr from the date of receipt of a shipment of universal waste.

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>CLEANUP SITES</b></p> <p><b>General</b></p> <p><b>4-159.</b> When a facility has a hazardous substance contaminated site which might require CERCLA response actions, a removal site evaluation is required to be done. (40 CFR 300.410).</p>	<p>Determine if the facility has a contaminated site which might need to undergo CERCLA response actions.</p> <p>Verify that a removal site evaluation is done as quickly as possible.</p> <p>(NOTE: In response to a petition by potentially affected people, the facility may perform a removal preliminary assessment based on readily available information.)</p> <p>Verify that the removal site evaluation is not terminated until the following is determined:</p> <ul style="list-style-type: none"> <li>- there is no release</li> <li>- the source is neither a vessel or a facility (see definitions)</li> <li>- the release involves neither a hazardous substance, nor a pollutant that may present an imminent and substantial danger to the public health or welfare</li> <li>- the release is one of the following which is subject to limited response: <ul style="list-style-type: none"> <li>- it is of a naturally occurring substance in its unaltered form, or altered solely through naturally occurring processes or phenomena, from a location where it is naturally found</li> <li>- it is from products that are a part of the structure of, and result in exposure within, residential buildings or business or community structures\</li> <li>- it is into public or private drinking water supplies due to deterioration of the system of ordinary use</li> </ul> </li> <li>- the amount, quantity, or concentration released does not warrant federal response</li> <li>- a party responsible for the release, or any other person, is providing appropriate response, and on-scene monitoring by the government is not required</li> <li>- the removal site evaluation is completed.</li> </ul> <p>Verify that the results of the removal site evaluation are documented.</p> <p>Verify that, if natural resources are or may be injured by the release, state and federal trustees of the property are notified.</p> <p>(NOTE: The removal site evaluation may indicate that a removal action is not required but that remediation action may be necessary.)</p>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>4-160.</b> Sites which are going to undergo cleanup that pose a threat to human health should be identified or demarcated (MP).</p> <p><b>4-161.</b> When removal actions are required as a result of the site evaluation, specific actions must be taken (40 CFR 300.415(a) through 300.415(f)).</p>	<p>Verify that contaminated sites which pose a threat to human health are marked, fenced, or in some manner demarcated.</p> <p>(NOTE: The requirements listed here do not apply to removal actions taken pursuant to Section 104(b) of CERCLA.)</p> <p>Verify that, when it is determined that removal actions are appropriate, the actions begin as soon as possible.</p> <p>Verify that, when there is a planning period of at least 6 mo before onsite activities are initiated, the following are done:</p> <ul style="list-style-type: none"> <li>- an engineering evaluation/cost analysis (EE/CA) or its equivalent is done</li> <li>- sampling and analysis plans are developed if environmental samples are going to be collected.</li> </ul> <p>(NOTE: Examples of removal actions include the following:</p> <ul style="list-style-type: none"> <li>- fences, warning signs, or other security and site control precautions</li> <li>- drainage controls</li> <li>- stabilization of berms, dikes, or impoundments or drainage or closing of lagoons</li> <li>- capping of contaminated soils or sludges</li> <li>- using chemicals or other materials to retard the spread of the contamination</li> <li>- excavation, consolidation, or removal of highly contaminated soils from drainage or other areas</li> <li>- removal of drums, barrels, tanks or other bulk containers</li> <li>- containment, treatment, disposal or incineration of hazardous materials</li> <li>- provision of alternate water supply.)</li> </ul>



**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>4-162.</b> The remedial design/remedial action (RD/RA) is required to be in conformance with the remedy selected and set forth in the record of decision (ROD) or other decision document (40 CFR 300.435).</p> <p><b>4-163.</b> A remedial site evaluation consists of a remedial preliminary assessment (PA) and a remedial site inspection (SI) (40 CFR 300.420).</p>	<p>Verify that the RD/RA activities meet the requirements outlined in the ROD or interagency agreement (IAG), including meeting deadlines.</p> <p>(NOTE: The principle model for a PA is Guidance for Performing Preliminary Assessments Under CERCLA, EPA/540/G91-013.)</p> <p>Verify that the remedial PA includes the following:</p> <ul style="list-style-type: none"> <li>- a review of existing information about a release such as information on the pathways of exposure, exposure targets, and source</li> <li>- offsite reconnaissance as appropriate</li> <li>- onsite reconnaissance as appropriate.</li> </ul> <p>Verify that a remedial PA is done for all sites at the facility listed in CERCLIS.</p> <p>Verify that a PA report is developed that includes:</p> <ul style="list-style-type: none"> <li>- a description of the release</li> <li>- a description of the probable nature of the release</li> <li>- a recommendation on whether further action is warranted, which lead agency should conduct further action and whether a SI or removal action or both should be undertaken.</li> </ul> <p>Verify that a remedial SI is done when a PA is inconclusive in order to:</p> <ul style="list-style-type: none"> <li>- eliminate from further consideration releases that pose no significant threat</li> <li>- determine the potential need for removal action</li> <li>- collect or develop additional data to evaluate the release.</li> </ul> <p>Verify that the remedial SI builds upon information gathered in the remedial PA and involves, as appropriate both on and offsite field investigatory efforts and sampling.</p> <p>Verify that, prior to conducting field sampling as a part of the SI, a sampling analysis plan is developed.</p>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<b>4-163. (continued)</b>	<p>Verify that, upon completion of the remedial SI, a report is generated that includes:</p> <ul style="list-style-type: none"> <li>- a description /history/nature of waste handling</li> <li>- a description of known contaminants</li> <li>- a description of known pathways</li> <li>- an identification and description of human and environmental targets</li> <li>- a recommendation on whether further action is warranted.</li> </ul>
<p><b>4-164.</b> When a remedial investigation/feasibility study (RI/FS) is done to assess site conditions and evaluate alternatives, specific tasks are required as a part of the RI/FS (40 CFR 300.430(a)(2)).</p>	<p>Verify that the RI/FS includes the following activities:</p> <ul style="list-style-type: none"> <li>- assembling and evaluating data on the site, including the results of any removal actions, remedial preliminary assessment and site inspections, and NPL listing process</li> <li>- evaluation of the data</li> <li>- identification of response scenarios and potentially applicable technologies and operable units that may address site problems</li> <li>- identification of the need for treatability studies</li> <li>- identification of the type, quantity, and quality of data that will be collected to support decisions regarding remedial response activities</li> <li>- site specific health and safety plans</li> <li>- notification of state and Federal trustees if natural resources are or may be injured by the release</li> <li>- sampling and analysis plans</li> <li>- initial identification of potential state and Federal ARARs and as appropriate, other criteria, advisories, or guidance to be considered.</li> </ul> <p>Verify that the scope and timing of these activities is tailored to the nature and complexity of the problem and the response alternatives being considered.</p>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>CLEANUP SITES</b></p> <p><b>Administrative Record</b></p> <p><b>4-165.</b> The administrative record is required to be located at the office of the facility or other central location and made available for public review (40 CFR 300.805).</p>	<p>(NOTE: The requirements for an administrative record applies to all response actions taken under section 104 of CERCLA or sought, secured, or ordered administratively or judicially under section 106 of CERCLA as follows:</p> <ul style="list-style-type: none"> <li>- remedial actions where a remedial investigation started after the promulgation of the regulations concerning the administrative record</li> <li>- removal actions where the action memorandum is signed after the promulgation of these requirements.)</li> </ul> <p>Verify that a docket has been established at the facility or other central location.</p> <p>Verify that a copy of the documents are made available for public inspection at or near the site except in the following cases:</p> <ul style="list-style-type: none"> <li>- sampling and testing data, quality control and quality assurance documents, and chain of custody forms need not be located at or near the site if the index to the administrative record indicates the location and availability of this information</li> <li>- guidance documents not generated specifically for the site need not be located at or near the site if they are maintained at the central location and the index indicate the location and availability of these documents</li> <li>- publicly available technical literature not specific to the site need not be located at or near the site if it is maintained in a central location and the index indicates the location and availability of the information</li> <li>- documents included in the confidential portion of the administrative record</li> <li>- the administrative record for a removal action where the release, or threat of a release, requires that onsite removal activity occurs within hours of the determination that removal is appropriate and onsite removal activities stop within 30 days of starting need be available only at the central location.</li> </ul>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:  
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**4-166.** The administrative record must be made available for public inspection when the engineering evaluation/cost analysis (EE/CA) is made available for public comment (40 CFR 300.815 and 300.820).

(NOTE: This requirement is a part of a one-time critical removal action.)

Verify that, if it is determined that a removal action is appropriate and that a planning period of 6 mo exists before onsite removal action, the following is done:

- the administrative record is made available for public inspection when the EE/CA is made available
- a notice of the availability of the administrative file is published in a newspaper of general circulation
- a public comment period is provided for
- a written response to significant comments is included in the administrative file
- public participation procedures as outlined in 40 CFR 300.415(m) (see checklist item 4-132) are done.

Verify that, if it is determined that a removal action is appropriate and there is not a planning period of 6 mo, the following is done:

- the administrative record file is made public no later than 60 days after the start of onsite removal activity
- a notice of availability is published in a local newspaper of general circulation
- a public comment period of at least 30 days is provided for beginning at the time the administrative record is made available to the public
- a written response to significant comments is placed in the administrative file.

**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>CLEANUP SITES</b></p> <p><b>Community Relations</b></p> <p><b>4-167.</b> In the case of a removal action, specific community relations activities are required to be done (40 CFR 300.415(m) and CERCLA Section 300.40(m)(1)).</p>	<p>Verify that, if the facility has conducted a removal action, the facility has appointed a spokesperson.</p> <p>Verify that, when it is determined based on the site evaluation, that removal is appropriate and less than 6 mo exists before onsite removal activity begins, the following is done:</p> <ul style="list-style-type: none"> <li>- a notice of availability of the administrative record is published in a major local newspaper of general circulation within 60 day of the start of removal activity</li> <li>- a public comment period of not less than 30 days is provided from the time the administrative record file is made available for public inspection</li> <li>- a written response is prepared for significant comments.</li> </ul> <p>Verify that, for removal actions where onsite actions are expected to extend beyond 120 days from the start of onsite removal activities, the following is done by the end of the 120 day period:</p> <ul style="list-style-type: none"> <li>- local officials, community residents, public interest groups, or other interested parties are interviewed to solicit their concerns and how they would like to be involved in the Superfund process</li> <li>- prepare a formal community relations plan (CRP) specifying actions that will be taken</li> <li>- establish at least one local information repository at or near the location of the response action.</li> </ul> <p>Verify that, when there is a planning period of at least 6 mo prior to the start of onsite removal actions, the following are done:</p> <ul style="list-style-type: none"> <li>- prior to the completion of the EE/CA: <ul style="list-style-type: none"> <li>- local officials, community residents, public interest groups, or other interested parties are interviewed to solicit their concerns and how they would like to be involved in the Superfund process</li> <li>- prepare a formal CRP specifying actions that will be taken</li> <li>- establish at least one local information repository at or near the location of the response action no later than when the EE/CA approval memo is signed</li> </ul> </li> <li>- publish a notice of availability and brief description of the EE/CA in a major local newspaper of general circulation</li> <li>- provide a reasonable opportunity of not less than 30 days for comments</li> <li>- prepare a written response to comments.</li> </ul>

<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS WASTE MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<p><b>4-168.</b> Specific community relations activities are required to occur in relation to a remedial investigation (40 CFR 300.430(c)).</p>	<p>(NOTE: These community relations requirements apply to all remedial activities undertaken pursuant to CERCLA section 104 and to section 106 or section 122 consent orders or decrees, or section 106 administrative orders.)</p> <p>Verify that the following are done prior to starting field work for remedial investigations:</p> <ul style="list-style-type: none"> <li>- local officials, community residents, public interest groups, or other interested parties are interviewed to solicit their concerns and how they would like to be involved in the Superfund process</li> <li>- prepare a formal Community Relations Plan (CRP) specifying actions that will be taken</li> <li>- establish at least one local information repository at or near the location of the response action</li> <li>- inform the community of the availability of technical assistance grants.</li> </ul>
<p><b>4-169.</b> During the process of selecting a remedy, specific community relations activities are required to occur (40 CFR 300.430(f)(3)).</p>	<p>Verify that after preparation of the proposed plan, the following activities are done:</p> <ul style="list-style-type: none"> <li>- publication of a notice of availability of the proposed plan in a major local newspaper of general circulation</li> <li>- the proposed plan and supporting analysis and information are made available in the administrative record</li> <li>- at least 30 days is provided for oral and written comments</li> <li>- the opportunity for a public meeting is provided during the public comment period at or near the site at issue</li> <li>- creation of a transcript of the public meeting and the transcript is made available to the public</li> <li>- preparation of a written summary of the significant comments, criticisms, and new relevant information submitted during the such comment period and the lead agency's response to each.</li> </ul> <p>Verify that, if additional information which has a significant impact becomes available after the publication of the proposed plan and prior to the adoption of the selected remedy in the record decision, the facility:</p> <ul style="list-style-type: none"> <li>- includes a discussion in the ROD/decision document (DD) of the changes and reasons for changes</li> <li>- seeks additional public comment on the revised proposed plan.</li> </ul> <p>(NOTE: ROD is only appropriate for NPL, non-NPL sites still require a DD.)</p>

**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>4-170.</b> When the ROD/DD is signed, a notice of availability must be published and the record made available for public inspection (40 CFR 300.430(f)(6)).</p> <p><b>4-171.</b> Specific community relations activities are required to occur during the remedial design/remedial action (RD/RA) phase of the installation restoration program (IRP) (40 CFR 435(c)).</p>	<p>Verify that, when the ROD/DD was signed, a notice was published in a major local newspaper of general circulation.</p> <p>Verify that the ROD/DD is available for public inspection and copying at or near the facility prior to the start of any remedial activities.</p> <p>Verify that, if the RA or enforcement action taken, or the settlement or consent decree entered into, differs significantly from the remedy selected in the ROD with respect to cost, scope, or performance, one of the following is done:</p> <ul style="list-style-type: none"> <li>- publish an explanation of the significant differences</li> <li>- propose an amendment to the ROD/DD.</li> </ul> <p>Verify that, after the completion of the final engineering design, a fact sheet is issued and a public briefing is done, as appropriate, prior to the initiation of the remedial action.</p>





**COMPLIANCE CATEGORY:  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>CLEANUP SITES</b></p> <p><b>NPL Sites</b></p> <p><b>4-172.</b> Facilities with sites on the NPL are required to appoint a remedial project manager (40 CFR 300.120 (c) and 300.120(d)).</p> <p><b>4-173.</b> Federal facilities on the NPL are required to have an IAG with the USEPA (CERCLA, Section 120(e)(2) and 120(e)(4)).</p>	<p>Verify that for releases of hazardous substances, pollutants, or contaminants on, or the sole source of the release is from, any FWS facility or vessel, the facility has an appointed remedial project manager and onscene coordinator.</p> <p>Verify that an IAG is in place and contains the following:</p> <ul style="list-style-type: none"> <li>- a review of alternative remedial actions and selection of a remedial action by the head of the relevant department, agency, or instrumentality and the administrator or, if unable to reach agreement on selection of a remedial action, selection of the administrator.</li> <li>- a schedule for the completion of the remedial action</li> <li>- arrangements for long term operation and maintenance of the facility.</li> </ul> <p>Verify that the terms of the IAG are being met.</p>



## Appendix 4-1

### Hazardous Waste from Nonspecific Sources and from Specific Sources (40 CFR 261.31 and 261.32)

**Table I**  
**Hazardous Waste from Nonspecific Sources**

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
	<u>Generic</u>	
F001	The spent halogenated solvents used in degreasing. Trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and the chlorinated fluorocarbons; all spent solvent mixtures or blends used in degreasing containing before use, a total of 10 percent or more (by volume) of one or more of the above halogenated solvents listed in F002, F004, F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(t)
F002	The following spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,1,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane; all spent solvent mixtures or blends containing, before use, a total of 10 percent or more by volume, of one or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(t)
F003	The spent nonhalogenated solvents, xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; and the still bottoms from the recovery of these solvents and spent solvent mixtures.	(i)
F004	The spent nonhalogenated solvents, cresols and cresylic acid, and nitrobenzene; and the still bottoms from the recovery of these solvents.	(t)
F005	The following spent nonhalogenated solvents: toluene, methyl ethyl ketone, carbons disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures or blends containing, before use, a total of 10 percent or more by volume of one or more of the above nonhalogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these solvents.	(i,t)
F006	Wastewater treatment sludges from electroplating operations except from the following processes: (1) sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning stripping associated with tin, zinc, and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.	(t)
F007	Spent cyanide plating bath solution from electroplating operations.	(r,t)

(continued)

## Appendix 4-1 (continued)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
F008	Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.	(r,t)
F009	Spent stripping and cleaning bath solutions from electroplating operations when cyanides are used in the process.	(r,t)
F010	Quenching bath residues from oil baths from metal heat treating operations when cyanides are used in the process.	(r,t)
F011	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.	(r,t)
F012	Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process.	(t)
F019	Wastewater treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process.	(t)
F020	Wastes from use of tri-, or tetrachlorophenol, or intermediates used to produce its pesticide derivatives. **	(h)
F021	Wastes of pentachlorophenol or intermediates used to produce its derivatives. **	(h)
F022	Wastes, of tetra-, penta-, or hexachlorobenzenes under alkaline conditions. **	(h)
F023	Wastes, of tri and tetrachlorophenols. **	(t)
F024	Wastes, including but not limited to distillation residues, heavy ends, tars, and reactor cleanout wastes from the production of chlorinated aliphatic hydrocarbons, utilizing free radical catalyzed processes having carbon chain lengths from one to five (omits light ends, spent filters and filter aids, spent desiccants, wastewater, wastewater treatment sludges, spent catalysts and wastes listed in 40 CFR 261.32).	(t)
F025	Condensed light ends, spent filters aids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution.	(t)
F026	Wastes of tetra-, penta-, or hexachlorobenzene under alkaline conditions.	(h)
F027	Discarded, unused formulations containing tri-, tetra-, or pentachlorophenol or discarded, unused formulations containing compounds derived from these chlorophenols (does not include hexachlorophene synthesized from prepurified 2,4,5-trichlorophenol as the sole component).	(h)
F028	Residues from incineration or thermal treatment of soil contaminated with USEPA hazardous waste Nos. F020, F021, F022, F023, F026, and F027.	(t)

(continued)

## Appendix 4-1 (continued)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
F032	Wastewaters (except those that have not come into contact with process contaminants), process residue, preservative drippage, and spent formulations from wood preserving processes generated at plants that currently use or have previously used chlorophenolic formulations (except potentially cross-contaminated wastes that have had the F032 waste code deleted in accordance with 261.35 and the generator does not resume or initiate use of chlorophenolic formulations). This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.	(t)
F034	Wastewaters (except those that have come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use cresote formulations. This listing does not include K001 bottom sludge from the treatment of wastewater from wood preserving processes that use creosote and or phentachlorophenol.	(t)
F035	Wastewaters (except those that have come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use inorganic preservatives containing arsenic or chormium. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.	(t)
F037	Petroleum refinery primary oil/water/solids separation sludge--any sludge generated from the gravitational separation of oil/water/solids during the storage or treatment of process wastewaters and oily cooling wastewaters from petroleum refiners. This includes, but is not limited to, sludges generated in: oil/water/solids separators; tanks and impoundments; ditches and other conveyances; sumps; and stormwater units receiving dry weather flow. Sludges generated in stormwater units that do not receive dry weather flow, sludges generated from noncontact once through cooling waters segregated for treatment from other process or oily cooling waters, sludges generated in aggressive biological treatment units*** (including sludges generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and K051 wastes are not included in this listing.	(t)

(continued)

## Appendix 4-1 (continued)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
F038	Petroleum refinery secondary (emulsified) oil/water/solids separation sludge--any sludge and/or float generated from the physical and/or chemical separation of oil/water/solids in process wastewaters and oily cooling wastewaters from petroleum refineries. Such wastes include, but are not limited to, all sludges and floats generated in: induced air flotation (IAF) units, tanks and impoundments, and all sludges generated in DAF units. Sludges generated in stormwater units that do not receive dry weather flow, sludges generated from noncontact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludges, and floats generated in aggressive biological treatment units*** (including sludges and floats generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and F037, K048, and K051 wastes are not included in this listing.	(t)
F039	Leachate resulting from the management of one or more of the following wastes and no other hazardous waste retains its hazardous waste number(s): F020, F021, F022, F023, F026, F027, and/or F028.	

\* HAZARD CODES (Column 3)

t = toxic waste

i = ignitable waste

r = reactive waste

h = acute hazardous waste

\*\* (Except wastewater and spent carbon from hydrogen chloride purification); the manufacturing or production use: as a reactant, chemical intermediate, or component in a formulating process. The listing for F020 and F023 does not include wastes from the production of hexachlorophene from highly purified 2,4,5-trichlorophenol.

\*\*\* Aggressive biological treatment units are defined as units that employ one of the following treatment methods: activated sludge; trickling filter; rotating biological contactor for the continuous accelerated biological oxidation of wastewaters; or high-rate aeration. High-rate aeration is a system of surface impoundments or tanks, in which intense mechanical aeration is used to completely mix the wastes, enhance biological activity, and (A) the units employ a minimum of 6 hp per million gallons of treatment volume; and either (B) the hydraulic retention time of the unit is no longer than 5 days; (C) the hydraulic retention time is no longer than 30 days and the unit does not generate a sludge that is a hazardous waste by the toxicity characteristic.

NOTE: The listing of wastewaters that have not come into contact with process contaminants is stayed administratively. The listing for plants that have previously used chlorophenolic formulations is administratively stayed whenever these wastes are covered by the F032, F034 or F035 listings. These stays will remain in effect until further administrative action is taken.

(continued)

## Appendix 4-1 (continued)

**Table 2**  
**Hazardous Wastes from Specific Sources**

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
<b><u>Wood Preservation</u></b>		
K001	Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and /or pentachlorophenol.	(t)
<b><u>Inorganic Pigments</u></b>		
K002	Wastewater treatment sludge from the production of chrome yellow and organe pigments.	(t)
K003	Wastewater treatment sludge from the production of molybdate orange pigments.	(t)
K004	Wastewater treatment sludge from the production of zinc yellow pigments.	(t)
K005	Wastewater treatment sludge from the production of chrome green pigments.	(t)
K006	Wastewater treatment sludge from the production of chrome green pigments (anhydrous and hydrated).	(t)
K007	Wastewater treatment sludge from the production of iron blue pigments.	(t)
K008	Oven residue from the production of chrome oxide green pigments.	(t)
<b><u>Organic Chemicals</u></b>		
K009	Distillation bottoms from the production of acetaldehyde from ethylene.	(t)
K010	Distillation side cuts from the production of acetaldehyde from ethylene.	(t)
K011	Bottom stream from the wastewater stripper in the production of acrylonitrile.	(r,t)
K013	Bottom stream from the acetonitrile column in the production of acrylonitrile.	(r,t)
K014	Bottoms from the acetonitrile purification column in the production of acrylonitrile.	(t)
K015	Still bottoms from the distillation of benzyl chloride.	(t)
K016	Heavy ends or distillation residues from the production of carbon tetrachloride.	(t)

(continued)

## Appendix 4-1 (continued)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
K017	Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin.	(t)
K018	Heavy ends from fractionation in ethyl chloride production.	(t)
K019	Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production.	(t)
K020	Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production.	(t)
K021	Aqueous spent antimony catalyst waste from fluoromethanes production.	(t)
K022	Distillation bottom tars from the production of phenol/acetone from cumene.	(t)
K023	Distillation light ends from the production of phthalic anhydride from naphthalene.	(t)
K024	Distillation bottoms from the production of phthalic anhydride from naphthalene.	(t)
K025	Distillation bottoms from the production of nitrobenzene by the nitration of benzene.	(t)
K026	Stripping still tails from the production of methyl ethyl pyridines.	(t)
K027	Centrifuge residue from toluene diisocyanate production.	(r,t)
K028	Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane.	(t)
K029	Waste from the product stream stripper in the production of 1,1,1-trichloroethane.	(t)
K030	Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene.	(t)
K083	Distillation bottoms from aniline production.	(t)
K085	Distillation of fractionation column bottoms from the production of chlorobenzene.	(t)
K093	Distillation light ends from the production of phthalic anhydride from ortho-xylene.	(t)
K094	Distillation bottoms from the production of phthalic anhydride from ortho-xylene.	(t)
K095	Distillation bottoms from the production of 1,1,1-trichloroethane.	(t)
K096	Heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane.	(t)
K103	Process residues from aniline extraction from the production of aniline.	(t)

(continued)



## Appendix 4-1 (continued)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
K104	Combined wastewater streams generated from nitrobenzene or aniline production.	(t)
K105	Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes.	(t)
K107	Column bottoms from product separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid.	(C,T)
K108	Condensed column overheads from product separation and condensed reactor vent gases from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.	(I,T)
K109	Spent filter cartridges from product purification from production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.	(T)
K110	Condensed column overheads from intermediate separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.	(T)
K111	Product washwaters from the production of dinitrotoluene via nitration of toluene.	(c,t)
K112	Reaction byproduct water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene.	(t)
K113	Condensed liquid light ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.	(t)
K114	Vicinals from the purification of toluenediamine in the production of toluenediamine.	(t)
K115	Heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.	(t)
K116	Organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediamine.	(t)
K117	Wastewater from the reactor vent gas scrubber in the production of ethylene dibromide via bromination of ethene.	(t)
K118	Spent adsorbent solids from purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene.	(t)
K136	Still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene.	(t)
K149	Distillation bottoms from the production of alpha- (or methyl) chlorinated toluenes, ring-chlorinated toluenes, benzoyl chlorides, and compounds with mixtures of these functional groups. (This waste does not include still bottoms for the distillation of benzyl chloride.)	(t)

(continued)

## Appendix 4-1 (continued)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
K150	Organic residuals, excluding spent carbon adsorbent, from the spent chlorine gas and hydrochloric acid recovery processes associated with the production of alpha- (or methyl) chlorinated toluenes, ring -chlorinated toluenes, benoyl chlorides, and compounds with mixtures of these functional groups.	(t)
K151	Wastewater treatment sludges, excluding neutralization and biological sludges, generated during the treatment of wastewaters from the production of alpha- (or methyl-) chlorinated toluenes, ring-chlorinated toluenes, benzo; chlorides, and compounds with mixtures of these functional groups.	(t)
<b><u>Inorganic Chemicals</u></b>		
K071	Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used.	(t)
K073	Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production.	(t)
K106	Wastewater treatment sludge from the mercury cell process in chlorine production.	(t)
<b><u>Hazardous Waste from Explosives Manufacturing</u></b>		
K044	Wastewater treatment sludge from the manufacturing and processing of explosives.	(r)
K045	Spent carbon from the treatment of wastewater containing explosives.	(r)
K046	Wastewater treatment sludges from the manufacturing, formulation, and loading of lead-based initiating compounds.	(t)
K047	Pink/red water from TNT operations.	(t)

NOTE: Hazardous waste created from the production of pesticides, petroleum refining, coking, ink formulation, the production of: iron and steel, primary copper, primary lead, primary zinc, primary aluminum, ferroalloys, veterinary pharmaceuticals, and secondary lead are not included in this table due to their nonapplicability at installation/CW facilities.

**\* HAZARD CODES (Column 3)**

t = toxic waste

i = ignitable waste

r = reactive waste

h = acute hazardous waste

## Appendix 4-2

### Commercial Chemical Products or Manufacturing Chemical Intermediates Identified as Toxic Wastes (40 CFR 261.33(f))

(COMMENT: primary hazardous properties of these materials have been indicated by the letter (t) (toxicity), (r) (reactivity), (i) (ignitibility), and (c) (corrosivity); absence of a letter indicates that the compound is only listed for acute toxicity.)

USEPA Hazardous Waste Number	Substance
U394	A2213
U001	acetaldehyde (i)
U034	acetaldehyde, trichloro-
U187	acetamide, N-(4-ethoxyphenyl)-
U005	acetamide, N-9H-fluoren-2-yl-
U240	acetic acid, (2,4-dichloropheoxy)-, salts and esters
U112	acetic acid, ethyl ester (i)
U144	acetic acid, lead(2+) salt
U214	acetic acid, thallium(1+) salt
see F027	acetic acid, (2,4,5-trichlorophenoxy)-
U002	acetone (i)
U003	acetonitrile (i, t)
U004	acetophenone
U005	2-acetylaminoflourene
U006	acetyl chloride (c, r, t)
U007	acrylamide
U008	acrylic acid (i)
U009	acrylonitrile
U011	amitrole
U012	aniline (i, t)
U136	arsenic acid, dimethyl-
U014	auramine
U015	azaserine
U365	H-azepine-1-carbothioic acid, S-ethyl ester

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste Number	Substance
U010	azirino(2,3,3,4(pyrrolo(1,2-a)indole -4,7-dione, 6-amino-8-[(aminocarbonyloxy)methyl]-1,1a,2,8,8a,8b- hexahydro-8a-methoxy-5-methyl-,
U280	barban
U278	bendiocarb
U364	bendiocarb phenol
U271	benomyl
U157	benz[j]aceanthrylene, 1,2-dihydro-3- methyl-
U016	benza[c]ridine
U017	benzal chloride
U192	benzamide, 3,5-dichloro-n- (1,1-diethyl-2-propynyl-
U018	benz[a]anthracene
U094	1,2-benzanthracene, 7,12-dimethyl-
U012	benzenamine (i,t)
U014	benzenamine, 4,4-carbonimidoylbis(N,N-dimethyl-
U049	benzenamine, 4-chloro-2-methyl-,hydrochloride
U093	benzenamine, N,N-dimethyl-4-(phenylazo)-
U328	benzenamine, 2-methyl-
U353	benzenamine, 4-methyl-
U158	benzenamine, 4,4-methylenebis(2-chloro-
U222	benzenamine, 2-methyl-, hydrochloride
U181	benzenamine, 2,-methyl-5-nitro
U019	benzene (i, t)
U038	benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy, ethyl ester
U030	benzene, 1-bromo-4-phenoxy-
U035	benzenebutanoic acid, 4-[bis(2-chloroethyl)amino]-
U037	benzene, chloro-
U221	benzenediamine, ar-methyl-
U028	1,2-benzendicarboxylic acid, [bis(2-ethyl-hexyl)]ester
U069	1,2-benzenedicarboxylic acid, dibutyl ester

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste Number	Substance
U088	1,2-benzenedicarboxylic acid, diethyl ester
U102	1,2-benzenedicarboxylic acid, dimethyl ester
U107	1,2-benzenedicarboxylic acid, dioctyl ester
U070	benzene, 1,2-dichloro-
U071	benzene, 1,3-dichloro-
U072	benzene, 1,4-dichloro-
U060	benzene, 1,1'- (2,2-dichloroethylidene) bis[4-chloro-
U017	benzene, (dichloromethyl)-
U223	benzene, 1,3-diisocyanatomethyl- (r,t)
U239	benzene, dimethyl-(i,t)
U201	1,3-benzenediol
U127	benzene, hexachloro-
U056	benzene, hexahydro- (i)
U220	benzene, methyl-
U105	benzene, 1-methyl-2,4-dinitro-
U106	benzene, 2-methyl-1,3-dinitro-
U055	benzene, (1-methylethyl)-(i)
U169	benzene, nitro- (i,t)
U183	Benzene, pentachloro-
U185	benzene, pentachloronitro-
U020	benzenesulfonic acid chloride (c,r)
U020	benzenesulfonyl chloride (c,r)
U207	benzene, 1,2,4,5-tetrachloro-
U061	benzene, 1,1'-(2,2,2- trichloroethylidene) bis[4-chloro
U247	benzene, 1,1'-(2,2,2- trichloroethylidene)[4-methoxy-
U023	benzene, (trichloromethyl)-
U234	benzene, 1,3,5-trinitro-
U021	benzidine
U202	1,2-benzisothiazolin-3-one, 1,1-dioxide and salts
U278	1,3-benzodioxol-4-ol, 2,2-dimethyl-, methyl carbam- ate

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste Number	Substance
U364	1,3-benzodioxol-4-ol, 2,2-dimethyl-,
U203	1,3-benzodioxole, 5-(2-propenyl)-
U141	1,3-benzodioxole, 5-(1-propenyl)-
U090	1,3-benzodioxole, 5-propyl-
U367	benzofuranol, 2,3-dihydro-2,2-dimethyl-
U064	benzo[rs]pentaphene
U248	2-H-1-benzopyran-2-on2, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, and salts, when present at concentrations of 0.3% or less
U022	benzo[a]pyrene
U197	p-benzoquinone
U023	benzotrichloride (c,r,t)
U085	2,2-bioxirane
U021	(1,1-biphenyl)-4,4-diamine
U073	(1,1-biphenyl)-4,4-diamine, 3,3-dichloro
U091	(1,1-biphenyl)-4,4-diamine, 3,3- dimethoxy-
U095	(1,1-biphenyl)4,4-diamine, 3,3- dimethyl-
U401	bis(dimethylthiocarbamoyl) sulfide
U400	bis(pentamethylene)thiuram tetrasulfide
U225	bromoform
U030	4-bromophenyl phenyl ether
U128	1,3-butadiene, 1,1,2,3,4,4- hexachloro
U172	1-butanamine, N-butyl-N-nitroso-
U031	1-butanol (i)
U159	2-butanone (i,t)
U160	2-butanone peroxide (r,t)
U053	2-butenal
U074	2-butene, 1,4-dichloro- (i,t)
U143	2-butenic acid, 2-methyl-, 7- [(2,3-dihydroxy-2-(1-methoxyethyl) -3-methyl-1-oxobutoxy)methyl] - 2,3,5,7s-rytshyfto-1- pyrrolizin-1-yl ester, [1S-[alpha(Z),7(2S,3R), 7aalpha]]-

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste Number	Substance
U031	n-Butyl alcohol (i)
U392	butylate
U136	cacodylic acid
U032	calcium chromate
U372	carbamic acid, 1H-benzimidazol-2-yl, methyl ester
U271	carbamic acid, [1-[(butylamino)carbonyl]-1H-benzimidazol-2-yl]-, methyl ester
U375	carbamic acid, butyl-, 3-iodo-2-propynyl ester
U280	carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester
U238	carbamic acid, ethyl ester
U178	carbamic acid, methylnitroso- ethyl ester
U373	carbamic acid, phenyl-, 1-methylethyl ester
U409	carbamic acid, [1,2-phenylenebis (iminocarbonothioyl)]bis-, dimethyl ester
U097	carbamic chloride, dimethyl-
U379	carbamodithioic acid, dibutyl, sodium salt
U277	carbamodithioic acid, diethyl, 2-chloro-2-propenyl ester
U381	carbamodithioic acid, diethyl-, sodium salt,
U383	carbamodithioic acid, dimethyl, potassium salt
U382	carbamodithioic acid, dimethyl-, sodium salt
U376	carbamodithioic acid, dimethyl-, tetraanhydrosulfide with orthothioselenious acid
U114	carbamodithioic acid, 1,2- ethanediylbis-, salts and esters
U378	carbamodithioic acid, (hydroxymethyl)methyl-, monopotassium salt
U384	carbamodithioic acid; methyl-, monosodium salt
U377	carbamodithioic acid, methyl-, monopotassium salt
U062	carbamothioic acid, bis(1-methylethyl)-S- (2,3-dichloro-2-propenyl) ester
U389	carbamothioic acid, bis(1-methylethyl)-S-(2,3,3-trichloro-2-propenyl) ester

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste Number	Substance
U392	carbamothioic acid, bis(1-methylpropyl)-S-ethyl ester
U391	carbamothioic acid, butylethyl-, S-propyl ester
U385	carbamothioic acid, cyclohexylethyl-, S-ethyl ester
U390	carbamothioic acid, dipropyl-, S-ethyl ester
U387	carbamothioic acid, dipropyl-, S-(phenylmethyl) ester
U385	carbamothioic acid, dipropyl-, S-propyl ester
U279	carbaryl
U372	carbendazim
U367	carbofuran phenol
U215	carbonic acid, dithallium(1+)salt
U033	carbonic difluoride
U156	carbonochlorodic acid, methyl ester (i,t)
U033	carbon oxyfluoride (r,t)
U211	carbon tetrachloride
U034	chloral
U035	chlorambucil
U036	chlordane, alpha and gamma isomers
U026	chlomaphazine
U037	chlorobenzene
U039	p-chloro-m-cresol
U042	2-chloroethyl vinyl ether
U044	chloroform
U046	chloromethyl methyl ether
U047	beta-chloronaphthalene
U048	o-chlorophenol
U049	4-chloro-o-toluidine, hydrochloride
U032	chromic acid H <sub>2</sub> CrO <sub>4</sub> , calcium salt
U050	chrysene
U393	copper, bis(dimethylcarbamodithioao-S,S')-
U393	copper, dimethyldithiocarbamate

(continued)



## Appendix 4-2 (continued)

USEPA Hazardous Waste Number	Substance
U051	creosote
U052	cresols (cresylic acid)
U053	crotonaldehyde
U055	cumene (i)
U246	cyanogen bromide
U386	cycloate
U197	2,5-cyclohexadiene-1, 4-dione
U056	cyclohexane (i)
U129	cyclohexane 1,2,3,4,5,6- hexachloro-, (1alpha, 2alpha, 3beta, 4alpha, 6beta)-
U057	cyclohexanone (i)
U130	1,3-cyclopentadiene, 1,2,3,4,5,5- hexachloro-
U058	cyclophosphamide
U240	2,4-d, salts and esters
U059	daunomycin
U366	dazomet
U060	DDD
U061	DDT
U062	diallate
U063	dibenz[a,h]anthracene
U064	dibenzo[a,i]pyrene
U066	1,2-dibromo-3-chloropropane
U069	dibutyl phthalate
U070	o-Dichlorobenzene
U071	m-Dichlorobenzene
U072	p-Dichlorobenzene
U073	3,3'-dichlorobenzidine
U074	1,4-dichloro-2-butene (i,t)
U075	dichlorodifluoromethane
U078	1,1-dichloroethylene
U079	1,2-dichloroethylene

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste Number	Substance
U025	dichloroethyl ether
U027	dichloroisopropyl ether
U024	dichloromethoxy ethane
U081	2,4-dichlorophenol
U082	2,6-dichlorophenol
U084	1,3-dichloropropene
U085	1,2:3,4-diepoxybutane (i,t)
U395	diethylene glycol, dicarbamate
U108	1,4-diethyleneoxide
U028	diethylhexyl phthalate
U086	N,N-diethylhydrazine
U087	O,O-diethyl-s-methyl dithiophosphate
U088	diethyl phthalate
U089	diethylstilbestrol
U090	dihydrosafrole
U091	3,3'-dimethoxybenzidine
U092	dimethylamine (i)
U093	dimethylaminoazobenzene
U094	7,12-dimethylbenz[a]anthracene
U095	3,3-dimethylbenzidine
U096	alpha,alpha-dimethylbenzylhydroperoxide (r)
U097	dimethylcarbamoyl chloride
U098	1,1-dimethylhydrazine
U099	1,2-dimethylhydrazine
U101	2,4-dimethylphenol
U102	dimethyl phthalate
U103	dimethyl sulfate
U105	2,4-dinitrotoluene
U106	2,6-dinitrotoluene
U107	di-n-octyl phthalate

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste Number	Substance
U108	1,4-dioxane
U109	1,2-diphenylhydrazine
U110	dipropylamine (i)
U111	di-n-propylnitrosamine
U403	disulfiram
U390	EPTC
U041	epichlorhydrin
U001	ethanal (i)
U404	ethanamine, N,N-diethyl-
U174	ethanamine, N-ethyl-N-nitroso-
U155	1,2-ethanediamine, n,n- dimethyl-n'-2-pyridinyl- n'-(2-thienylmethyl)-
U067	ethane, 1,2-dibromo-
U076	ethane, 1,1-dichloro-
U077	ethane, 1,2-dichloro-
U131	ethane, hexachloro-
U024	ethane, 1,1-[methylenebis(oxy)] bis[2-chloro-
U117	ethane, 1,1-oxybis- (i)
U025	ethane 1,1-oxybis[2-chloro-
U184	ethane, pentachloro-
U208	ethane, 1,1,1,2-tetrachloro-
U209	ethane, 1,1,2,2-tetrachloro-
U218	ethanethioamide
U226	ethane, 1,1,1-trichloro
U359	ethane, 1,1,2-trichloro-
U227	ethane, trichloro
U410	ethanimidothioic acid, N,N'-[thiobis[(methylimino)carbonyloxy]]bis-, dimethyl ester
U394	ethanimidothioic acid, 2-(dimethylamino)-N-hydroxy-2-oxo-, methyl ester
U359	ethanol, 2-ethoxy-

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste Number	Substance
U173	ethanol, 2,2'-(nitrosoimino)bis-
U395	Ethanol, 2,2'poxybis-, dicarbamate
U004	ethanone, 1-phenyl-
U043	ethene, chloro-
U042	ethene, (2-chloroethoxy-)
U078	ethene, 1,1-dichloro-
U079	ethene, 1,2-dichloro- (e)
U210	ethene, tetrachloro-
U228	ethene, trichloro
U112	ethyl acetate (i)
U113	ethyl acrylate (i)
U238	ethyl carbamate (urethane)
U117	ethyl ether (i)
U114	ethylenebisdithiocarbamic acid, salts and esters
U067	ethylene dibromide
U077	ethylene dichloride
U359	ethylene glycol monoethyl ether
U115	ethylene oxide (i,t)
U116	ethylenethiourea
U076	ethylidene dichloride
U118	ethyl methacrylate
U119	ethyl methanesulfonate
U407	ethyl ziram
U396	ferbam
U120	fluoranthene
U122	formaldehyde
U123	formic acid (c,t)
U124	furan (i)
U125	2-furancarboxaldehyde (i)
U147	2,5-furandione

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste Number	Substance
U213	furan, tetrahydro- (i)
U125	furfural (i)
U124	furfuran (i)
U206	glucopyranose, 2-deoxy-2 (3-methyl-3-nitroso-ureido)-
U126	glycidylaldehyde
U163	guanidine, N-methyl-N'-nitro- N-nitroso-
U127	hexachlorobenzene
U128	hexachlorobutadiene
U130	hexachlorocyclopentadiene
U131	hexachloroethane
U132	hexachlorophene
U243	hexachloropropene
U133	hydrazine (r,t)
U086	hydrazine, 1,2-diethyl-
U098	hydrazine, 1,1-dimethyl-
U099	hydrazine, 1,2-dimethyl-
U109	hydrazine, 1,2-diphenyl-
U134	hydrofluoric acid (c,t)
U134	hydrogen fluoride (c,t)
U135	hydrogen sulfide
U135	hydrogen sulfide
U096	hydroperoxide, 1-methyl-1-phenylethyl- (r)
U116	2-imidazolidinethione
U137	indeno(1,2,3-cd)pyrene
U375	3-iodo-2-propynyl n-butylcarbamate
U396	iron, tris(dimethylcarbamodithioato-S,S')
U190	1,3-isobenzofurandione
U140	isobutyl alcohol (i,t)
U141	isosafrole
U142	kepone

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste Number	Substance
U143	lasiocarpine
U144	lead acetate
U146	lead, bis(acetato-O) tetrahydroxytri-
U145	lead phosphate
U146	lead subacetate
U129	lindane
U163	mnng
U147	maleic anhydride
U148	maleic hydrazide
U149	malononitrile
U384	metam sodium
U150	melphalan
U151	mercury
U152	methacrylonitrile (i,t)
U092	methanamine (N-methyl- (i)
U029	methane, bromo-
U045	methane, chloro- (i,t)
U046	methane, chloromethoxy-
U068	methane, dibromo-
U080	methane, dichloro-
U075	methane, dichlorodifluoro-
U138	methane, iodo-
U119	methanesulfonic acid, ethyl ester
U211	methane, tetrachloro-
U153	methanethiol (i,t)
U225	methane, tribromo-
U044	methane, trichloro-
U121	methane, trichlorofluoro-
U036	4-7-Methano-1Hindene, 1,2,4,5,6,7,8,8-ocachloro- 2,3,3a,4,7,7a-hexahydro
U154	methanol (i)

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste Number	Substance
U155	methapyrilene
U142	1,3,4-metheno-2H- cyclobuta[cd]pentalen-2-one-1,1a,3,3a,4,5,5,5a,5b,6- decachlorooctahydro-
U247	methoxychlor
U154	methyl alcohol (i)
U029	methyl bromide
U186	1-methylbutadiene (i)
U045	methyl chloride (i,t)
U156	methyl chlorocarbonate (i,t)
U226	methyl chloroform
U157	3-methylcholanthrene
U158	4,4-methylenebis-(2-chloroaniline)
U068	methylene bromide
U080	methylene chloride
U159	methyl ethyl ketone (mek) (i,t)
U160	methyl ethyl ketone peroxide (r,t)
U138	methyl iodide
U161	methyl isobutyl ketone (i)
U162	methyl methacrylate (i,t)
U161	4-methyl-2-pentanone (i)
U164	methylthiouracil
U010	mitomycin C
U365	molinate
U059	5,12-Naphthacenedione, (Bs(cis)8- acetyl-10-[(3-amino-2,3,6-trideoxy- alpha-L-lyxo-hexopyrano-syl)oxyl]- 7-8,9,10-tetrahydro-6,8,11- trihydroxy-1-methoxy-
U167	1-naphthalenamine
U168	2-naphthalenamine
U026	naphthalenamine, N,N'-bis (2-chloroethyl)-
U165	naphthalene
U047	naphthalene, 2-chloro-

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste Number	Substance
U166	1,4-naphthalenedione
U236	2,7-naphthalenedisulfonic acid, 3,3'-[(3,3'-dimethyl-(1,1'-biphenyl)- bis(azo)bis(5-amino-4-hydroxy)-, tetrasodium salt
U279	1-Naphthalenol, methylcarbamate
U166	1,4-Naphthoquinone
U167	alpha-naphthylamine
U168	beta-naphthylamine
U217	nitric acid, thallium(1+) salt (2-chloromethyl)-
U169	nitrobenzene (i,t)
U170	p-nitrophenol
U171	2-nitropropane (i,t)
U172	n-nitrosodi-n-butylamine
U173	n-nitrosodiethanolamine
U174	n-nitrosodiethylamine
U176	n-nitroso-n-ethylurea
U177	n-nitroso-n-methylurea
U178	n-nitroso-n-methylurethane
U179	n-nitrosopiperidine
U180	n-nitrosopyrrolidine
U181	5-nitro-o-toluidine
U193	1,2-oxathiolane, 2,2-dioxide
U058	2H-1,3,2-Oxazaphosphorine,2[bis(2-chloroethyl)amino]tetrahydro-, 2-oxide.
U115	oxirane (i,t)
U126	oxiranecarboxyaldehyde
U041	oxirane, 2-(chloromethyl)-
U182	paraldehyde
U391	pebulate
U183	pentachlorobenzene
U184	pentachloroethane

(continued)



## Appendix 4-2 (continued)

USEPA Hazardous Waste Number	Substance
U185	pentachloronitrobenzene
see F027	pentachlorophenol
U161	pentanol, 4-methyl-
U186	1,3-pentadiene (i)
U187	phenacetin
U188	phenol
U048	phenol, 2-chloro-
U039	phenol, 4-chloro-3-methyl-
U081	phenol, 2,4-dichloro-
U082	phenol, 2,6-dichloro-
U089	phenol, 4,4'-(1,2-diethyl- 1,2-ethenediyl)bis-,
U101	phenol, 2,4-dimethyl-
U052	phenol, methyl
U132	phenol, 2,2'-methylenebis [3,4,6-trichloro-
U411	phenol, 2-(1-methylethoxy)-, methylcarbamate
U170	phenol, 4-nitro-
see F027	phenol, pentachloro-
see F027	phenol, 2,3,4,6-tetrachloro-
see F027	phenol, 2,4,5-trichloro-
see F027	phenol, 2,4,6-trichloro-
U150	l-phenylalanine, 4- [bis(2-chloroethyl)amino]-
U145	phosphoric acid, lead salt
U087	phosphorodithioic acid, 0,0-diethyl S-methyl ester
U189	phosphorus sulfide (r)
U190	phthalic anhydride
U191	2-picoline
U179	piperidine, 1-nitroso-
U400	piperidine, 1,1'-(tetrathiodicarbonothioyl)-bis-
U383	potassium dimethyldithiocarbamate
U378	potassium n-hydroxymethyl- n-methyldi-thiocarbamate

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste Number	Substance
U377	potassium n-methyldithiocarbamate
U192	pronamide
U194	1-propanamine (i,t)
U111	1-propanamine, n-nitroso-n-propyl-
U110	1-propanamine, n-propyl- (i)
U066	propane, 1,2-dibromo-3-chloro-
U083	propane, 1,2-dichloro-
U149	propanedinitrile
U171	propane, 2-nitro- (i,t)
U027	propane, 2,2-oxybis[2-chloro-
U193	1,3-propane sultone
see F027	propanoic acid, 2-(2,4,5- trichlorophenoxy)-
U235	1-propanol, 2,3-dibromo-, phosphate (3:1)
U140	1-propanol, 2-methyl- (i,t)
U002	2-propanone (i)
U007	2-propenamide
U084	1-propene, 1,3-dichloro-
U243	1-propene, 1,1,2,3,3,3-hexachloro-
U009	2-propenenitrile
U152	2-propanenitrile, 2-methyl- (i,t)
U008	2-propenoic acid (i)
U113	2-propenic acid, ethyl ester (i)
U118	2-propenoic acid, 2-methyl-, ethyl ester
U162	2-propenoic acid, 2-methyl-, methyl ester (i,t)
U373	Propham
U411	Propoxur
U194	n-propylamine (i,t)
U083	propylene dichloride
U387	Prosulfocarb
U148	3,6-pyridazinedione, 1,2-dihydro-

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste Number	Substance
U196	pyridine
U191	pyridine, 2-methyl-
U237	2,4(1H,3H)-pyrimidinedione, 5-[bis(2-chloroethyl)amino]-
U164	4(1H)-pyrimidinone, 2,3-dihydro-6-methyl 2-thioxo-
U180	pyrrolidine, 1-nitroso-
U200	reserpine
U201	resorcinol
U202	saccharin and salts
U203	safrole
U204	selenious acid
U204	selenium dioxide
U205	selenium sulfide
U205	selenium sulfide SeS <sub>2</sub> (r,t)
U376	selenium, tetrakis(dimethyldithiocarbamate)
U015	L-serine, diazoacetate (ester)
see F027	silvex (2,4,5-tp)
U379	sodium dibutyldithiocarbamate
U381	sodium diethyldithiocarbamate
U382	sodium dimethyldithiocarbamate
U206	streptozotocin
U277	sulfallate
U103	sulfuric acid, dimethyl ester
U189	sulfur phosphide (r)
see FO27	2,4,5-T
U402	tetrabutylthiuram sulfide
U207	1,2,4,5-tetrachlorobenzene
U208	1,1,1,2-tetrachloroethane
U209	1,1,2,2-tetrachloroethane
U210	tetrachloroethylene
see F027	2,3,4,6-tetrachlorophenol

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste Number	Substance
U213	tetrahydrofuran (i)
U401	tetramethylthiuram monosulfide
U214	thallium (i) acetate
U215	thallium (i) carbonate
U216	thallium chloride
U216	thallium chloride TlCl
U217	thallium (i) nitrate
U366	2H-1,3,5-thiadiazine-2-thione, tetrahydro-3,5-dime- thyl-
U218	thioacetamide
U410	thiodicarb
U153	thiomethanol (i,t)
U402	thioperoxydicarbonic diamide, tetrabutyl-
U403	thioperoxydicarbonic diamide, tetraethyl-
U244	thioperoxydicarbonic diamide, tetramethyl-
U409	thiophanate-methyl
U219	thiourea
U244	thiuram
U220	toluene
U221	toluenediamine
U223	toluene diisocyanate (r,t)
U328	o-toluidine
U353	p-toluidine
U222	o-toluidine hydrochloride
U389	triallate
U011	1H-1,2,4-triazol-3-amine
U227	1,1,2-trichloroethane
U228	trichloroethylene
U121	trichloromonofluoromethane
See F023	2,4,5-trichlorophenol
See F023	2,4,6-trichlorophenol

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste Number	Substance
U404	triethylamine
U234	1,3,5-trinitrobenzene (r,t)
U182	1,3,5-trioxane, 2,4,6-trimethyl-
U235	tris(2,3-dibromopropyl)phosphate
U236	trypan blue
U237	uracil mustard
U176	urea, n-ethyl-n-nitroso-
U177	urea, n-methyl-n-nitroso-
U385	verriolate
U043	vinyl chloride
U248	Warfarin, when present at concentrations of .3% or less
U239	xylene (i)
U200	yohimban-16-carboxylic acid, 11,17-dimethoxy-18- [(3,4, 5-trimethoxy-benzoyl)oxy], methyl ester
U407	zinc, bis(diethylcarbarnodithioato-S-S')-
U249	Zinc phosphide, when present at concentrations of 10% or less



### Appendix 4-3

#### Toxicity Characteristics Constituents and Regulatory Levels (40 CFR 261.24)

USEPA HW No.	Constituent	CAS No	Regulatory level (mg/L)
D004	Arsenic	7440-38-2	5.0
D005	Barium	7440-39-3	100.0
D018	Benzene	71-43-2	0.5
D006	Cadmium	7440-43-9	1.0
D019	Carbon tetrachloride	56-23-5	0.5
D020	Chlordane	57-74-9	0.03
D021	Chlorobenzene	108-90-7	100.0
D022	Chloroform	67-66-3	6.0
D007	Chromium	7440-47-3	5.0
D023	o-Cresol	95-48-7	200.0 <sup>1</sup>
D024	m-Cresol	108-39-4	200.0 <sup>1</sup>
D025	p-Cresol	106-44-5	200.0 <sup>1</sup>
D026	Cresol		200.0 <sup>1</sup>
D016	2,4-D	94-75-7	10.0
D027	1,4-Dichlorobenzene	106-46-7	7.5
D028	1,2-Dichloroethane	107-06-2	0.5
D029	1,1-Dichloroethylene	75-35-4	0.7
D030	2,4-Dinitrotoluene	121-14-2	0.13 <sup>2</sup>
D012	Endrin	72-20-8	0.02
D031	Heptachlor (and its hydroxide)	76-44-8	0.008
D032	Hexachlorobenzene	118-74-1	0.13 <sup>2</sup>
D033	Hexachloro-1,3-butadiene	87-68	0.50
D034	Hexachloroethane	67-72-1	3.0
D008	Lead	7439-92-1	5.0
D013	Lindane	58-89-9	0.4
D009	Mercury	7439-97-6	0.2
D014	Methoxychlor	72-43-5	10.0
D035	Methyl ethyl ketone	78-93-3	200.0
D036	Nitrobenzene	98-95-3	2.0
D037	Pentachlorophenol	87-86-5	100.0
D038	Pyridine	110-86-1	5.0 <sup>2</sup>
D010	Selenium	7782-49-2	1.0
D011	Silver	7440-22-4	5.0
D039	Tetrachloroethylene	127-18-4	0.7
D015	Toxaphene	8001-35-2	0.5
D040	Trichloroethylene	79-01-6	0.5
D041	2,4,5-Trichlorophenol	95-95-4	400.0
D042	2,4,6-Trichlorophenol	88-06-2	2.0
D017	2,4,5-TP (Silvex)	93-72-1	1.0
D043	Vinyl chloride	75-01-4	0.2

<sup>1</sup> If o-, m-, and p-cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used.

<sup>2</sup> Quantitation limit is greater than the calculated regulatory level. Therefore, the quantitation limit becomes the regulatory level.





## Appendix 4-4

### Commercial Chemical Products or Manufacturing Chemical Intermediates Identified as Acute Hazardous Waste (40 CFR 261.33(a) through 261.33(e))

(COMMENT: Primary hazardous properties of these materials have been indicated by the letters (t) (toxicity), and (r) (reactivity); absence of a letter indicates that the compound only is listed for acute toxicity.)

Hazardous Waste Number	Substance	
P023	Acetaldehyde, chloro-	
P002	Acetamide, N-(aminothioxomethyl)-	
P057	Acetamide, 2-fluoro-	
P058	Acetic acid, fluoro-, sodium salt	
P002	1-Acetyl-2-thiourea	
P003	Acrolein	
P070	Aldicarb	
P203	Aldicarb sulfone	
P004	Aldrin	
P005	Allyl alcohol	
P006	Aluminum phosphide	(r,t)
P007	5-(Aminomethyl)-3-isoxazolol	
P008	4-Aminopyridine	
P009	Ammonium picrate	(r)
P119	Ammonium vanadate	
P099	Argebtate(1), bis(cyano-C)-, potassium	
P010	Arsenic acid $H^3AsO_4$	
P012	Arsenic oxide $As_2O_3$	
P011	Arsenic oxide $As_2O_5$	
P011	Arsenic pentoxide	
P012	Arsenic trioxide	
P038	Arsine, diethyl	
P036	Arsonous dichloride, phenyl	
P054	Aziridine	
P067	Aziridine, 2-methyl	
P013	Barium cyanide	
P024	Benzenamine, 4-chloro-	
P077	Benzenamine, 4-nitro-	
P028	Benzene, (chloromethyl)-	
P042	1,2-Benzenediol, 4-[1-hydroxy- 2-(methylamino)ethyl]-	(r)
P046	Benzeneethanamine, alpha,alpha- dimethyl-	(r)
P014	Benzenethiol	

(continued)

## Appendix 4-4 (continued)

Hazardous Waste Number	Substance
P127	7-Benzofuranol, 2,3-dihydro-2,2-dimethyl)-, methylcarbamate
P188	Benzoic Acid
P001	2H-1-Benzopyran-2-one,4-hydroxy-3- (3-oxo-1-phenylbutyl)-, and salts when present at concentrations greater than 0.3%
P028	Benzyl chloride
P015	Beryllium powder
P016	Bis(chloromethyl)ether
P017	Bromoacetone
P018	Brucine
P045	2-Butanone, 3,3-dimethyl-1-(methylthio)-, O-(methylamino)carbonyl) oxime
P021	Calcium cyanide
P021	Calcium cyanide $\text{Ca}(\text{CN})_2$
P189	Carbamic acid
P191	Carbamic acid, dimethyl,
P192	Carbamic Acid, dimethyl, 3-methyl-1-(1-methylethyl)-1H-pyrazol-5y) ester
P193	Carbamic Acid, methyl, 3-methylphenyl ester
P127	Carbofuran
P022	Carbon disulfide
P095	Carbonic dichloride
P189	Carbosulfan
P023	Chloroacetaldehyde
P024	p-Chloroaniline
P026	1-(o-Chlorophenyl)thiourea
P027	3-Chloropropionitrile
P029	Copper cyanide
P029	Copper cyanide $\text{Cu}(\text{CN})$
P202	m-Cumenyl methylcarbamate
P030	Cyanides (soluble cyanide salts), n.o.s.
P031	Cyanogen
P033	Cyanogen chloride
P033	Cyanogen chloride $(\text{CN})\text{Cl}$
P034	2-Cyclohexyl-4,6-dinitrophenol
P016	Dichloromethyl ether
P036	Dichlorophenylarsine
P037	Dieldrin
P038	Diethylarsine
P041	Diethyl-p-nitrophenyl phosphate
P040	O,O-Diethyl O-pyrazinyl phosphorothioate

(continued)

# Appendix 4-4 (continued)

Hazardous Waste Number	Substance
P043	Diisopropyl fluorophosphate (DEP)
P004	1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a- hexahydro-, (1alpha, 4alpha,4abeta,5alpha, 8alpha,8abeta)-
P060	1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a- hexahydro-, (1alpha, 4alpha,4abeta,5beta, 8beta,8abeta)-
P037	2,7:3,6-Dimethanonaph[2,3b]oxirane, 3,4,5,6,9,9-hexachloro-1a,2,2a,3, 6,6a,7,7a-octahydro-, (1-aal- pha,2beta,2aalpha,3beta, 6beta,6aalpha, 7beta,7aalpha)-
P051	2,7:3,6-Dimethanonaph[2,3b]oxirane, octahydro- , (1aalpha,2beta,2abeta,3alpha,6alpha, 6abeta,7beta,7aalpha)-
P044	Dimethoate
P045	3,3-Dimethyl-1-(methylthio)-2-butanone, O- [(methylamino)carbonyl]oxime
P046	alpha.alpha-Dimethylphenethylamine
P191	Dimetilan
P047	4,6-Dinitro-o-cresol and salts
P048	2,4-Dinitrophenol
P020	Dinoseb
P085	Diphosphoramidate, octamethyl-
P111	Diphosphoric acid, tetraethyl ester
P039	Disulfoton
P049	Dithiobiuret
P185	1,3-Dithiolane-2-carboxaldehyde, 2,4-dim- ethyl-, O-[(methylamino)-carbonyl]oxime
P050	Endosulfan
P088	Endothall
P051	Endrin
P051	Endrin and metabolites
P042	Epinephrine
P031	Ethanedinitrile
P066	Ethanimidothioic acid, N-[[[(methy- lamino)carbonyl]oxy]-, methyl ester
P194	Ethanimidothioic acid, 2-(dimethylamino)- N-[[[(methylamino) carbonyl]oxy]-2-oxo-, methyl ester
P101	Ethyl cyanide
P054	Ethyleneimine

(continued)

# Appendix 4-4 (continued)

Hazardous Waste Number	Substance	
P097	Famphur	
P056	Fluorine	
P057	Fluoroacetamide	
P058	Fluoroacetic acid, sodium salt	
P198	Formetanate hydrochloride	
P197	Formparanate	
P065	Fulminic acid, mercury(2+)salt	(r,t)
P059	Heptachlor	
P062	Hexaethyl tetraphosphate	
P116	Hydrazinecarbothioamide	
P068	Hydrazine, methyl-	
P063	Hydrocyanic acid	
P063	Hydrogen cyanide	
P096	Hydrogen phosphide	
P064	Isocyanic acid, methyl ester	
P060	Isodrin	
P192	Isolan	
P202	3-Isopropylphenyl N-methylcarbamate	
P007	3(2H)-Isoxazolone, 5-(aminomethyl)-	
P196	Manganese, bis(dimethylcarbam	
P196	Manganese dimethyldithiocarbamate	
P092	Mercury (acetato-O)phenyl-	
P065	Mercury fulminate	(r,t)
P082	Methanamine, N-methyl-N-nitroso	
P197	Methanimidamide, N,N-dimethyl-N'-[2-methyl-4-[[[(methylamino)carbonyl]oxy]phenyl]	
P064	Methane, isocyanato-	
P016	Methane, oxybis[chloro-	
P112	Methane, tetranitro-	(r)
P118	Methanethiol, trichloro-	
P050	6,9-Methano-2,4,3-benzodioxathlepen, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-,3-oxide	
P059	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-	
P199	Methiocarb	
P066	Methomyl	
P068	Methyl hydrazine	
P064	Methyl isocyanate	
P069	2-Methylactonitrile	
P071	Methyl parathion	
P190	Metolcarb	
P199	Mexacarbate	

(continued)

## Appendix 4-4 (continued)

Hazardous Waste Number	Substance
P072	alpha-Naphthylthiourea
P073	Nickel carbonyl
P073	Nickel carbonyl, (T-4)-
P074	Nickel cyanide
P074	Nickel cyanide Ni (CN) <sub>2</sub>
P075	Nicotine and salts
P076	Nitric oxide
P077	p-Nitroaniline
P078	Nitrogen dioxide
P076	Nitrogen oxide NO
P078	Nitrogen oxide
P081	Nitroglycerine (r)
P082	N-Nitrosodimethylamine
P084	N-Nitrosomethylvinylamine
P074	Nickel cyanide
P085	Octamethylpyrophosphoramide
P087	Osmium oxide
P087	Osmium tetroxide
P088	7-Oxabicyclo[2.2.1]heptane-2,3- dicarboxylic acid
P194	Oxamyl
P089	Parathion
P034	Phenol, 2-cyclohexyl-4,6-dinitro
P128	Phenol, 4-(dimethylamino)-3,5-dimethyl-, methylcarbamate (ester)
P199	Phenol, (3,5-dimethyl-4-methylthio)-=, methylcarbamate
P048	Phenol, 2,4-dinitro
P047	Phenol, 2-methyl-4,6-dinitro- and salts
P202	Phenol, 3-(1-methylethyl)-, methyl carbamate
P201	Phenol, 3-methyl-5-(1-methylethyl)-, methyl carbamate
P020	Phenol, 2-(1-methylpropyl)-4,6-dinitro
P009	Phenol, 2,4,6-trinitro-, ammonium salt (r)
P092	Phenylmercury acetate
P093	Phenylthiourea
P094	Phorate
P095	Phosgene
P096	Phosphine
P041	Phosphoric acid, diethyl 4- nitrophenyl ester
P039	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester

(continued)

# Appendix 4-4 (continued)

Hazardous Waste Number	Substance
P094	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester
P044	Phosphorodithioic acid, O,O-dimethyl S[2-(methylamino)-2-oxoethyl] ester
P043	Phosphorofluoric acid, bis(1-methylethyl) - ester
P089	Phosphorothioic acid, O,O-diethyl O- (4-nitrophenyl) ester
P040	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester
P097	Phosphorothioic acid, O-[4-[(dimethylamino) sulfonyl]phenyl] O,O-dimethyl ester
P071	Phosphorothioic acid, O,O-dimethyl O- (4-nitrophenyl) ester
P204	Physostigmine
P188	Phosostigmine salicylate
P110	Plumbane, tetraethyl-
P098	Potassium cyanide
P098	Potassium cyanide K(CN)
P099	Potassium silver cyanide
P201	Promecarb
P203	Propanol, 2-methyl-2-(methyl-sulfonyl)-, O-[(methylamino)carbonyl] oxime
P070	Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]oxime
P101	Propanenitrile
P027	Propanenitrile, 3-chloro-
P069	Propanenitrile, 2-hydroxy-2-methyl
P081	1,2,3-Propanetriol, trinitrate
P017	2-Propanone, 1-bromo-
P102	Propargyl alcohol
P003	2-Propenal
P005	2-Propen- 1 -ol
P067	1,2-Propylenimine
P102	2-Propyn-1 -ol
P008	4-Pyridinamine
P075	Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl)-, (S)-, and salts
P204	Pyrrolo(2,3-b)indol-5-ol, 1,2,3a,8,8a-hexahydro-1,3a,8-trimethyl-, methylcarbamate (ester), (3aS-cis)
P114	Selenious acid, dithallium(1+) salt
P103	Selenourea

(continued)

# Appendix 4-4 (continued)

Hazardous Waste Number	Substance
P104	Silver cyanide
P104	Silver cyanide Ag(CN)
P105	Sodium azide
P106	Sodium cyanide
P106	Sodium cyanide Na(CN)
P108	Strychnidin-10-one, and salts
P018	Strychnidin 10-one, 2,3-dimethoxy-
P108	Strychnine and salts
P115	Sulfuric acid, dithallium(I) salt
P109	Tetraethyldithiopyrophosphate
P110	Tetraethyl lead
P111	Tetraethylpyrophosphate
P112	Tetranitromethane (r)
P062	Tetraphosphoric acid, hexaethyl ester
P113	Thallic oxide
P113	Thallium(III) oxide
P114	Thallium(I) selenite
P115	Thallium(I) sulfate
P109	Thiodiphosphoric acid, tetraethyl ester
P045	Thiofanox
P049	Thiomidodicarbonic diamide
P014	Thiophenol
P116	Thiosemicarbazide
P026	Thiourea, (2-chlorophenyl)-
P072	Thiourea, 1-naphthalenyl-
P093	Thiourea, phenyl-
P185	Tirpate
P123	Toxaphene
P118	Trichloromethanethiol
P119	Vanadic acid, ammonium salt
P120	Vanadium oxide V <sub>2</sub> O <sub>3</sub>
P120	Vanadium pentoxide
P084	Vinylamine, N-methyl-N-nitroso
P001	Warfarin, and salts, when present at concentrations greater than 0.3%
P205	Zinc, bis(dimethylcarbamodithioato-S,S')-
P121	Zinc cyanide
P121	Zinc cyanide Zn(CN) <sub>2</sub>
P122	Zinc phosphide Zn <sub>3</sub> P <sub>2</sub> , when present at concentrations greater than 0.10%
P205	Ziram





## Appendix 4-5

### Potentially Incompatible Hazardous Wastes (40 CFR 264, Appendix V)

Below are examples of potentially incompatible wastes, waste components, and materials, along with the harmful consequences that result from mixing materials in one group with materials in another group. The list is intended as a guide to indicate the need for special precautions when managing these potentially incompatible waste materials or components. This list is not intended to be exhaustive. Operators must, as the regulations require, adequately analyze their wastes so they can avoid creating uncontrolled substances or reactions of the type listed below, whether listed below or not.

In the lists below, the mixing of a Group A material with a Group B material may have the potential consequences as noted.

#### Potential Consequences: Heat generation, violent reaction.

Group 1-A	Group 1-B
Acetylene sludge	Acid sludge
Alkaline caustic liquids	Acid and water
Alkaline cleaner	Battery acid
Alkaline corrosive liquids	Chemical cleaners
Alkaline corrosive battery acid	Electrolyte, acid
Caustic wastewater	Etching acid liquid or solvent
Lime sludge and other corrosive alkalies	Pickling liquor and other corrosive acids
Lime wastewater	Spent acid
Lime and water	Spent mixed acid
Spent caustic	Spent sulfuric acid

#### Potential Consequences: Fire or explosion; generation of flammable hydrogen gas.

Group 2-A	Group 2-B
Aluminum	Any waste in Group 1-A or 1-B
Beryllium	
Calcium	
Lithium	
Magnesium	
Potassium	
Sodium	
Zinc powder	
Other reactive metals and metal hydrides	

(continued)

## Appendix 4-5 (continued)

**Potential Consequences: Fire, explosion, or heat generation;  
generation of flammable or toxic gases.**

Group 3-A	Group 3-B
Alcohols	Any concentrated waste in Groups 1-A or 1-B
Water	Calcium
	Lithium
	Metal hydrides
	Potassium
	$\text{SO}_2\text{Cl}_2$ , $\text{SOCl}_2$ , $\text{PCl}_3$ , $\text{CH}_3\text{SiCl}_3$
	Other water-reactive waste

**Potential Consequences: Fire explosion, or violent reaction.**

Group 4-A	Group 4-B
Alcohols	Concentrated Group 1-A or Group 1-B wastes
Aldehydes	Group 2-A wastes
Halogenated hydrocarbons	
Nitrated hydrocarbons	
Unsaturated hydrocarbons	
Other reactive organic compounds and solvents	

**Potential Consequences: Generation of toxic hydrogen cyanide, or hydrogen sulfide gas.**

Group 5-A	Group 5-B
Spent cyanide and sulfide solutions	Group 1-B wastes

**Potential Consequences: Fire, explosion, or violent reaction.**

Group 6-A	Group 6-B
Chlorates	Acetic acid and other organic acids
Chlorine	
Chlorites	Concentrated mineral acids
Chromic acid	Group 2-A wastes
Hypochlorites	Group 4-A wastes
Nitrates	Other flammable and combustible wastes
Nitric acid, fuming	
Perchlorates	
Permanganates	
Peroxides	
Other strong oxidizers	

Source: "Law, Regulations, and Guidelines for Handling of Hazardous Waste." California Department of Health, February 1975. (As referenced in 40 CFR, Part 264, Appendix V)

## Appendix 4-6

### Recordkeeping, Notification, and/or Certification Requirements for 40 CFR 268 (40 CFR 268, Appendix X)

Entity	Scenario	Frequenc y	Recipient of notification	Recordkeeping, notification, and/or certification requirements
Generator	A. Waste does not meet applicable treatment standards, or exceeds applicable prohibition levels (see 268.7(a)(1))	Each shipment	Treatment or storage facility	<p>Notice must include:</p> <ul style="list-style-type: none"> <li>- USEPA hazardous waste number</li> <li>- constituents of concern</li> <li>- treatability group</li> <li>- manifest number</li> <li>- waste analysis data (where avail.)</li> </ul>
	B. Waste can be disposed of without further treatment (meets applicable treatment standards or does not exceed prohibition levels upon generation (see 268.7(a)(2))).	Each shipment	Land disposal facility	<p>Notice and certification statement that wastes meets applicable treatment standards or applicable prohibited levels.</p> <p>Notice must include:</p> <ul style="list-style-type: none"> <li>- USEPA hazardous waste number</li> <li>- constituents of concern</li> <li>- treatability group</li> <li>- manifest number</li> <li>- waste analysis data (where avail.)</li> </ul> <p>Certification statement required under 268.7(a)(2)(ii) that waste complies with treatment standards and prohibitions.</p>
	C. Waste is subject to exemption from a prohibition on the type of land disposal utilized for the waste, such as a case-by-case extension under 268.5, an exemption under 268.6, or a nation-wide capacity variance (see 268.7(a)(3)).	Each shipment	Receiving facility	<p>Notice must include:</p> <ul style="list-style-type: none"> <li>- statement that the waste is not prohibited from land disposal</li> <li>- USEPA hazardous waste number</li> <li>- constituents of concern</li> <li>- treatability group</li> <li>- manifest number</li> <li>- waste analysis data (where avail.)</li> <li>- date the waste is subject to prohibitions.</li> </ul>

(continued)

# Appendix 4-6 (continued)

Entity	Scenario	Frequenc y	Recipient of notification	Recordkeeping, notification, and/or certification requirements
Generator (contin- ued)	D. Waste is being accu- mulated in tanks or con- tainers regulated under 40 CFR 262.34 and is being treated in such tanks or containers to meet applicable treat- ment standards (see 268.7(a)(4)).	Minimum of 30 days prior to treatment activity	USEPA Regional Administrator (or designated representative, or authorized State. Delivery must be veri- fied	Generator must develop, keep onsite, and follow a written waste analysis plan describing procedures used to comply with the treatment standards.  If waste is shipped offsite, gen- erator must also comply with notification requirement in 268.7(a)(2).
	E. Generator is manag- ing a lab pack contain- ing certain wastes and wishes to use an alter- native treatment stan- dard (see 268.7(a)(8)).	Each shipment	Treatment facility	Notice in accordance with 268.7(a)(1), (a)(5), and (a)(6), where applicable.  Certification in accordance with 268.7(a)(8).
	F. SQGs with tolling agreements	Initial shipment	Treatment facility	Must comply with applicable notification and certification requirements in 268.7(a)  Generator must also retain copy of the notification and certifica- tion together with tolling agree- ment onsite for at least 3 yr after termination or expiration of the agreement.
	G. Generator has determined waste is a restricted waste based solely on his knowl- edge of the waste (see 268.7(a)(5)).	NA	Generator's file	All supporting data must be retained onsite in generator's files.
	H. Generator has determine waste is restricted based on testing waste or an extract (see 268.7(a)(5)).	NA	Generator's file	All waste analysis data must be retained onsite in generators files.

(continued)

# Appendix 4-6 (continued)

Entity	Scenario	Frequency	Recipient of notification	Recordkeeping, notification, and/or certification requirements
Generator (continued)	I. Generator has determined that waste is excluded from the definition of hazardous or solid waste or exempt from Subtitle C regulation (see 268.7(a)(6)).	One time	Generator's file	Notice of generation and subsequent exclusion from the definition of hazardous or solid waste, or exemption from Subtitle C regulation, and information regarding the disposition of the waste.
	J. Generator (or treater) claims that hazardous debris is excluded from the definition of hazardous waste under 40 CFR 261.3(f)(1) (see 268.7(d)).	One time	USEPA Regional Administrator or authorized State. notification must be updated as necessary under 268.7(d)(2).	<p>Notice must include:</p> <ul style="list-style-type: none"> <li>- name and address of Subtitle D facility receiving treated debris</li> <li>- USEPA hazardous waste number and description of debris as initially generated</li> <li>- technology used to treat the debris.</li> </ul> <p>Certification and recordkeeping is in accordance with 268.7(d)(3).</p>
	K. Generator (or treater) claims that characteristic wastes are no longer hazardous (see 268.9(d)).	One time	Generator's (or treater's) files and USEPA Regional Administrator or authorized State. Notifications must be updated as necessary under 268.9(d).	<p>Notice must include:</p> <ul style="list-style-type: none"> <li>- name and address of Subtitle D facility receiving treated debris</li> <li>- USEPA hazardous waste number and description of debris as initially generated</li> <li>- treatability group</li> <li>- underlying hazardous constituents.</li> </ul> <p>Certification in accordance with 268.9(d)(2).</p>

(continued)

# Appendix 4-6 (continued)

Entity	Scenario	Frequenc y	Recipient of notification	Recordkeeping, notification, and/or certification requirements
<b>Generator (contin- ued)</b>	L. Other recordkeeping requirements (see 268.7(a)(7)).	NA	Generator's files	Generator must retain a copy of all notices, certifications, demonstrations, waste analysis data, and other documentation produced pursuant to 268.7 onsite for at least 5 yr from the date that the waste was last sent to onsite or offsite treatment, storage, or disposal. This period is automatically extended during enforcement actions or as requested by the Administrator.
<b>Treatment Facility</b>	A. Waste shipped from treatment facility to land disposal facility (see 268.7(b)(4) and (b)(5)).	Each shipment	Land disposal facility	<p>Notice must include:</p> <ul style="list-style-type: none"> <li>- USEPA hazardous waste number</li> <li>- constituents of concern</li> <li>- treatability group</li> <li>- manifest number</li> <li>- waste analysis data (where avail.)</li> </ul> <p>Applicable certification in accordance with 268.7(b)(5)(i), (ii), or (iii), stating that the waste or treatment residue has been treated in compliance with applicable treatment standards and prohibitions.</p>
	B. Waste treatment residue from a treatment or storage facility will be further managed at a different treatment or storage facility (see 268.7(b)(6)).	Each shipment	Receiving facility	Treatment, storage, or disposal facility must comply with all notices and certification requirements applicable to generators.

(continued)

# Appendix 4-6 (continued)

Entity	Scenario	Frequency	Recipient of notification	Recordkeeping, notification, and/or certification requirements
<b>Treatment Facility (continued)</b>	C. Where wastes are recyclable materials used in a manner consisting disposal subject to 266.20(b) (see 268.7(b)(7)).	Each shipment	Regional Administrator (or delegated representative)	<p>No notification to receiving facility required pursuant to 269.7(b)(4).</p> <p>Certification as described in 268.7(b)(5) and notice with information listed in 268.7(b)(4), except manifest number.</p> <p>Recycling facility must keep records of the name and location of each entity receiving hazardous waste-derived products.</p>
<b>Land Disposal Facility</b>	A. Wastes accepted by land disposal facility (see 268.7(c)).	NA	NA	Maintain copies of notice and certification specified in 268.7(a) and (b).





## Appendix 4-7

### Land Disposal Restricted Wastes and Their Effective Dates. (40 CFR 268, Appendix VII)

*Part 1--Land Disposal Restricted Wastes and Their Effective Dates*

Waste Code	Waste Category	Effective Date
California list	Liquid hazardous wastes, including free liquids associated with solid or sludge, containing free cyanides at concentrations greater than or equal to 1000 mg/L or certain metals or compounds of these metals greater than or equal to the prohibition levels.	8 July 1987
California list	Liquid (aqueous) hazardous wastes having a pH less than or equal to 2.	8 July 1987
California list	Dilute HOC wastewaters, defined as HOC-waste mixtures that are primarily water and that contain greater than or equal to 1000 mg/L but less than 10,000 mg/L.	8 July 1987
California list	Liquid hazardous waste containing PCBs greater than or equal to 50 ppm.	8 July 1987
California list	Other liquid and nonliquid hazardous wastes containing HOCs in total concentration greater than or equal to 1000 mg.	8 Nov 1988
D001	All	8 Aug 1990
D002	All	8 Aug 1990
D003	All	8 Aug 1990
D004	Wastewater	8 Aug 1990
D004	Nonwastewaters	8 May 1992
D005	Nonwastewater	8 May 1992
D006	All	8 Aug 1990
D007	All	8 Aug 1990
D008	Lead materials before secondary smelting	8 May 1992
D008	All others	8 Aug 1990
D009	Nonwastewater	8 May 1992
D009	All others	8 Aug 1990
D010	All	8 Aug 1990
D011	All	8 Aug 1990
D012	All	8 Aug 1990
D013	All	8 Aug 1990
D014	All	8 Aug 1990

(continued)

# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
D015	All	8 Aug 1990
D016	All	8 Aug 1990
D017	All	8 Aug 1990
F001	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	8 Nov 1988.
F001	All others	8 Nov 1986.
F002 (1,1,2 -trichloroethane)	Wastewater and nonwastewater	8 Aug 1990
F002	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	8 Nov 1988
F002	All others	8 Nov 1986
F003	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	8 Nov 1988
F003	All others	8 Nov 1986
F004	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	8 Nov 1988
F004	All others	8 Nov 1986
F005 (benzene, 2-ethoxy ethanol, 2-nitropropane)	Wastewater and nonwastewater	8 Aug 1990
F005	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and soils.	8 Nov 1988
F005	All others	8 Nov 1986
F006	Wastewater	8 Aug 1990
F006	Nonwastewater	8 Aug 1988
F006 (cyanides)	Nonwastewater	8 July 1989
F007	All	8 July 1989
F008	All	8 July 1989
F009	All	8 July 1989
F010	All	8 June 1989
F011 (cyanides)	Nonwastewater	8 Dec 1986
F011	All others	8 July 1989
F012 (cyanides)	Nonwastewater	8 Dec 1989
F012	All others	8 July 1989
F019	All	8 Aug 1990
F020	All	8 Nov 1988

(continued)

# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
F021	All	8 Nov 1988
F022	All	8 Nov 1988
F023	All	8 Nov 1988
F024 (metals)	Wastewater	8 June 1989
F024 (metals)	Nonwastewater	8 Aug 1990
F024b	All others	8 June 1989
F025	All	8 Aug 1990
F026	All	8 Nov 1988
F027	All	8 Nov 1988
F028	All	8 Nov 1988
F039	Wastewater	8 Aug 1990
F039	Nonwastewater	8 May 1992
K001 (organics)b	All	8 Aug 1988
K001	All others	8 Aug 1988
K002	All	8 Aug 1990
K003	All	8 Aug 1990
K004	Wastewater	8 Aug 1990
K004c	Nonwastewater	8 Aug 1990
K005	Wastewater	8 Aug 1990
K005c	Nonwastewater	8 June 1989
K006	All	8 Aug 1990
K007	Wastewater	8 Aug 1990
K007c	Nonwastewater	8 June 1989
K008	Wastewater	8 Aug 1990
K008c	Nonwastewater	8 Aug 1988
K009	All	8 June 1989
K010	All	8 June 1989
K011	Wastewater	8 Aug 1990
K011	Nonwastewater	8 June 1989
K013	Wastewater	8 Aug 1990
K013	Nonwastewater	8 June 1989
K014	Wastewater	8 Aug 1990
K014	Nonwastewater	8 June 1989
K015	Wastewater	8 Aug 1988
K015	Nonwastewater	8 Aug 1990
K016	All	8 Aug 1988
K017	All	8 Aug 1990

(continued)

# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
K018	All	8 Aug 1988
K019	All	8 Aug 1988
K020	All	8 Aug 1988
K021	Wastewater	8 Aug 1990
K021c	Nonwastewater	8 Aug 1988
K022	Wastewater	8 Aug 1990
K022	Nonwastewater	8 Aug 1988
K023	All	8 June 1989
K024	All	8 Aug 1988
K025	Wastewater	8 Aug 1990
K025c	Nonwastewater	8 Aug 1988
K026	All	8 Aug 1990
K027	All	8 June 1989
K028 (metals)	Nonwastewater	8 Aug 1990
K028	All others	8 June 1989
K029	Wastewater	8 Aug 1990
K029	Nonwastewater	8 June 1989
K030	All	8 Aug 1990
K031	Wastewater	8 Aug 1990
K031	Nonwastewater	8 May 1992
K032	All	8 Aug 1990
K033	All	8 Aug 1990
K034	All	8 Aug 1990
K035	All	8 Aug 1990
K036	Wastewater	8 June 1989
K036c	Nonwastewater	8 Aug 1988
K037b	Wastewater	8 Aug 1988
K037	Nonwastewater	8 Aug 1988
K038	All	8 June 1989
K039	All	8 June 1989
K040	All	8 June 1989
K041	All	8 Aug 1990
K042	All	8 Aug 1990
K043	All	8 June 1989
K044c	All	8 Aug 1988
K045c	All	8 Aug 1988
K046 (nonreactive)	Nonwastewater	8 Aug 1988

(continued)

# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
K046	All others	8 Aug 1990
K047c	All	8 Aug 1988
K048	Wastewater	8 Aug 1990
K048	Nonwastewater	8 Nov 1990
K049	Wastewater	8 Aug 1990
K049	Nonwastewater	8 Nov 1990
K050	Wastewater	8 Aug 1990
K050	Nonwastewater	8 Nov 1990
K051	Wastewater	8 Aug 1990
K051	Nonwastewater	8 Nov 1990
K052	Wastewater	8 Aug 1990
K052	Nonwastewater	8 Nov 1990
K060	Wastewater	8 Aug 1990
K060c	Nonwastewater	8 Aug 1988
K061	Wastewater	8 Aug 1990
K061	Nonwastewater (low zinc) (interim standard for high zinc remains in effect until 7 Aug 1991)	8 Aug 1988
K062	All	8 Aug 1988
K069 (noncalcium sul-fate)c	Nonwastewater	8 Aug 1988
K069	All others	8 Aug 1990
K071	All	8 Aug 1990
K073	All	8 Aug 1990
K083	All	8 Aug 1990
K084	Wastewater	8 Aug 1990
K084	Nonwastewater	8 May 1992
K085	All	8 Aug 1990
K086 (organics)b	All	8 Aug 1988
K086	All others	8 Aug 1988
K087	All	8 Aug 1988
K093	All	8 June 1989
K094	All	8 June 1989
K095	Wastewater	8 Aug 1990
K095	Nonwastewater	8 June 1989
K096	Wastewater	8 Aug 1990
K096	Nonwastewater	8 June 1989
K097	All	8 Aug 1990
K098	All	8 Aug 1990

(continued)

# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
K099	All	8 Aug 1988
K100	Wastewater	8 Aug 1990
K100c	Nonwastewater	8 Aug 1988
K101 (organics)	Wastewater	8 Aug 1988
K101 (metals)	Wastewater	8 Aug 1990
K101 (organics)	Nonwastewater	8 Aug 1988
K101 (metals)	Nonwastewater	8 May 1992
K102 (organics)	Wastewater	8 Aug 1988
K102 (metals)	Wastewater	8 Aug 1990
K102 (organics)	Nonwastewater	8 Aug 1988
K102 (metals)	Nonwastewater	8 May 1992
K103	All	8 Aug 1988
K104	All	8 Aug 1988
K105	All	8 Aug 1990
K106	Wastewater	8 Aug 1990
K106	Nonwastewater	8 May 1992
K113	All	8 June 1989
K114	All	8 June 1989
K115	All	8 June 1989
K116	All	8 June 1989
P001	All	8 Aug 1990
P002	All	8 Aug 1990
P003	All	8 Aug 1990
P004	All	8 Aug 1990
P005	All	8 Aug 1990
P006	All	8 Aug 1990
P007	All	8 Aug 1990
P008	All	8 Aug 1990
P009	All	8 Aug 1990
P010	Wastewater	8 Aug 1990
P010	Nonwastewater	8 May 1992
P011	Wastewater	8 Aug 1990
P011	Nonwastewater	8 May 1992
P012	Wastewater	8 Aug 1990
P012	Nonwastewater	8 May 1992
P013 (barium)	Nonwastewater	8 Aug 1990
P013	All others	8 June 1989

(continued)

# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
P014	All	8 Aug 1990
P015	All	8 Aug 1990
P016	All	8 Aug 1990
P017	All	8 Aug 1990
P018	All	8 Aug 1990
P020	All	8 Aug 1990
P021	All	8 June 1989
P022	All	8 Aug 1990
P023	All	8 Aug 1990
P024	All	8 Aug 1990
P026	All	8 Aug 1990
P027	All	8 Aug 1990
P028	All	8 Aug 1990
P029	All	8 June 1989
P030	All	8 June 1989
P031	All	8 Aug 1990
P033	All	8 Aug 1990
P034	All	8 Aug 1990
P036	Wastewater	8 Aug 1990
P036	Nonwastewater	8 May 1992
P037	All	8 Aug 1990
P038	Wastewater	8 Aug 1990
P038	Nonwastewater	8 May 1992
P039	All	8 June 1989
P040	All	8 June 1989
P041	All	8 June 1989
P042	All	8 Aug 1990
P043	All	8 June 1989
P044	All	8 June 1989
P045	All	8 Aug 1990
P046	All	8 Aug 1990
P047	All	8 Aug 1990
P048	All	8 Aug 1990
P049	All	8 Aug 1990
P050	All	8 Aug 1990
P051	All	8 Aug 1990
P054	All	8 Aug 1990

(continued)

# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
P056	All	8 Aug 1990
P057	All	8 Aug 1990
P058	All	8 Aug 1990
P059	All	8 Aug 1990
P060	All	8 Aug 1990
P062	All	8 June 1989
P063	All	8 June 1989
P064	All	8 Aug 1990
P065	Wastewater	8 Aug 1990
P065	Nonwastewater	8 May 1992
P066	All	8 Aug 1990
P067	All	8 Aug 1990
P068	All	8 Aug 1990
P069	All	8 Aug 1990
P070	All	8 Aug 1990
P071	All	8 June 1989
P072	All	8 Aug 1990
P073	All	8 Aug 1990
P074	All	8 June 1989
P075	All	8 Aug 1990
P076	All	8 Aug 1990
P077	All	8 Aug 1990
P078	All	8 Aug 1990
P081	All	8 Aug 1990
P082	All	8 Aug 1990
P084	All	8 Aug 1990
P085	All	8 June 1989
P087	All	8 May 1992
P088	All	8 Aug 1990
P089	All	8 June 1989
P092	Wastewater	8 Aug 1990
P092	Nonwastewater	8 May 1992
P093	All	8 Aug 1990
P094	All	8 June 1989
P095	All	8 Aug 1990
P096	All	8 Aug 1990
P097	All	8 June 1989

(continued)



# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
P099 (silver)	Wastewater	8 Aug 1990
P099	All others	8 June 1989
P101	All	8 Aug 1990
P102	All	8 Aug 1990
P103	All	8 Aug 1990
P104 (silver)	Wastewater	8 Aug 1990
P104	All others	8 June 1989
P105	All	8 Aug 1990
P106	All	8 June 1989
P108	All	8 Aug 1990
P109	All	8 June 1989
P110	All	8 Aug 1990
P111	All	8 June 1989
P112	All	8 Aug 1990
P113	All	8 Aug 1990
P114	All	8 Aug 1990
P115	All	8 Aug 1990
P116	All	8 Aug 1990
P118	All	8 Aug 1990
P119	All	8 Aug 1990
P120	All	8 Aug 1990
P121	All	8 June 1989
P122	All	8 Aug 1990
P123	All	8 Aug 1990
U001	All	8 Aug 1990
U002	All	8 Aug 1990
U003	All	8 Aug 1990
U004	All	8 Aug 1990
U005	All	8 Aug 1990
U006	All	8 Aug 1990
U007	All	8 Aug 1990
U008	All	8 Aug 1990
U009	All	8 Aug 1990
U010	All	8 Aug 1990
U011	All	8 Aug 1990
U012	All	8 Aug 1990
U014	All	8 Aug 1990

(continued)

# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
U015	All	8 Aug 1990
U016	All	8 Aug 1990
U017	All	8 Aug 1990
U018	All	8 Aug 1990
U019	All	8 Aug 1990
U020	All	8 Aug 1990
U021	All	8 Aug 1990
U022	All	8 Aug 1990
U023	All	8 Aug 1990
U024	All	8 Aug 1990
U025	All	8 Aug 1990
U026	All	8 Aug 1990
U027	All	8 Aug 1990
U028	All	8 June 1989
U029	All	8 Aug 1990
U030	All	8 Aug 1990
U031	All	8 Aug 1990
U032	All	8 Aug 1990
U033	All	8 Aug 1990
U034	All	8 Aug 1990
U035	All	8 Aug 1990
U036	All	8 Aug 1990
U037	All	8 Aug 1990
U038	All	8 Aug 1990
U039	All	8 Aug 1990
U041	All	8 Aug 1990
U042	All	8 Aug 1990
U043	All	8 Aug 1990
U044	All	8 Aug 1990
U045	All	8 Aug 1990
U046	All	8 Aug 1990
U047	All	8 Aug 1990
U048	All	8 Aug 1990
U049	All	8 Aug 1990
U050	All	8 Aug 1990
U051	All	8 Aug 1990
U052	All	8 Aug 1990

(continued)

# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
U053	All	8 Aug 1990
U055	All	8 Aug 1990
U056	All	8 Aug 1990
U057	All	8 Aug 1990
U058	All	8 June 1989
U059	All	8 Aug 1990
U060	All	8 Aug 1990
U061	All	8 Aug 1990
U062	All	8 Aug 1990
U063	All	8 Aug 1990
U064	All	8 Aug 1990
U066	All	8 Aug 1990
U067	All	8 Aug 1990
U068	All	8 Aug 1990
U069	All	8 June 1989
U070	All	8 Aug 1990
U071	All	8 Aug 1990
U072	All	8 Aug 1990
U073	All	8 Aug 1990
U074	All	8 Aug 1990
U075	All	8 Aug 1990
U076	All	8 Aug 1990
U077	All	8 Aug 1990
U078	All	8 Aug 1990
U079	All	8 Aug 1990
U080	All	8 Aug 1990
U081	All	8 Aug 1990
U082	All	8 Aug 1990
U083	All	8 Aug 1990
U084	All	8 Aug 1990
U085	All	8 Aug 1990
U086	All	8 Aug 1990
U087	All	8 June 1989
U088	All	8 June 1989
U089	All	8 Aug 1990
U090	All	8 Aug 1990
U091	All	8 Aug 1990

(continued)

# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
U092	All	8 Aug 1990
U093	All	8 Aug 1990
U094	All	8 Aug 1990
U095	All	8 Aug 1990
U096	All	8 Aug 1990
U097	All	8 Aug 1990
U098	All	8 Aug 1990
U099	All	8 Aug 1990
U101	All	8 Aug 1990
U102	All	8 June 1989
U103	All	8 Aug 1990
U105	All	8 Aug 1990
U106	All	8 Aug 1990
U107	All	8 June 1989
U108	All	8 Aug 1990
U109	All	8 Aug 1990
U110	All	8 Aug 1990
U111	All	8 Aug 1990
U112	All	8 Aug 1990
U113	All	8 Aug 1990
U114	All	8 Aug 1990
U115	All	8 Aug 1990
U116	All	8 Aug 1990
U117	All	8 Aug 1990
U118	All	8 Aug 1990
U119	All	8 Aug 1990
U120	All	8 Aug 1990
U121	All	8 Aug 1990
U122	All	8 Aug 1990
U123	All	8 Aug 1990
U124	All	8 Aug 1990
U125	All	8 Aug 1990
U126	All	8 Aug 1990
U127	All	8 Aug 1990
U128	All	8 Aug 1990
U129	All	8 Aug 1990
U130	All	8 Aug 1990

(continued)

# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
U131	All	8 Aug 1990
U132	All	8 Aug 1990
U133	All	8 Aug 1990
U134	All	8 Aug 1990
U135	All	8 Aug 1990
U136	Wastewater	8 Aug 1990
U136	Nonwastewater	8 May 1992
U137	All	8 Aug 1990
U138	All	8 Aug 1990
U140	All	8 Aug 1990
U141	All	8 Aug 1990
U142	All	8 Aug 1990
U143	All	8 Aug 1990
U144	All	8 Aug 1990
U145	All	8 Aug 1990
U146	All	8 Aug 1990
U147	All	8 Aug 1990
U148	All	8 Aug 1990
U149	All	8 Aug 1990
U150	All	8 Aug 1990
U151	Wastewater	8 Aug 1990
U151	Nonwastewater	8 May 1992
U152	All	8 Aug 1990
U153	All	8 Aug 1990
U154	All	8 Aug 1990
U155	All	8 Aug 1990
U156	All	8 Aug 1990
U157	All	8 Aug 1990
U158	All	8 Aug 1990
U159	All	8 Aug 1990
U160	All	8 Aug 1990
U161	All	8 Aug 1990
U162	All	8 Aug 1990
U163	All	8 Aug 1990
U164	All	8 Aug 1990
U165	All	8 Aug 1990
U166	All	8 Aug 1990

(continued)

# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
U167	All	8 Aug 1990
U168	All	8 Aug 1990
U169	All	8 Aug 1990
U170	All	8 Aug 1990
U171	All	8 Aug 1990
U172	All	8 Aug 1990
U173	All	8 Aug 1990
U174	All	8 Aug 1990
U176	All	8 Aug 1990
U177	All	8 Aug 1990
U178	All	8 Aug 1990
U179	All	8 Aug 1990
U180	All	8 Aug 1990
U181	All	8 Aug 1990
U182	All	8 Aug 1990
U183	All	8 Aug 1990
U184	All	8 Aug 1990
U185	All	8 Aug 1990
U186	All	8 Aug 1990
U187	All	8 Aug 1990
U188	All	8 Aug 1990
U189	All	8 Aug 1990
U190	All	8 June 1989
U191	All	8 Aug 1990
U192	All	8 Aug 1990
U193	All	8 Aug 1990
U194	All	8 Aug 1990
U196	All	8 Aug 1990
U197	All	8 Aug 1990
U200	All	8 Aug 1990
U201	All	8 Aug 1990
U202	All	8 Aug 1990
U203	All	8 Aug 1990
U204	All	8 Aug 1990
U205	All	8 Aug 1990
U206	All	8 Aug 1990
U207	All	8 Aug 1990

(continued)

# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
U208	All	8 Aug 1990
U209	All	8 Aug 1990
U210	All	8 Aug 1990
U211	All	8 Aug 1990
U213	All	8 Aug 1990
U214	All	8 Aug 1990
U215	All	8 Aug 1990
U216	All	8 Aug 1990
U217	All	8 Aug 1990
U218	All	8 Aug 1990
U219	All	8 Aug 1990
U220	All	8 Aug 1990
U221	All	8 June 1989
U222	All	8 Aug 1990
U223	All	8 June 1989
U225	All	8 Aug 1990
U226	All	8 Aug 1990
U227	All	8 Aug 1990
U228	All	8 Aug 1990
U234	All	8 Aug 1990
U235	All	8 June 1989
U236	All	8 Aug 1990
U237	All	8 Aug 1990
U238	All	8 Aug 1990
U239	All	8 Aug 1990
U240	All	8 Aug 1990
U243	All	8 Aug 1990
U244	All	8 Aug 1990
U246	All	8 Aug 1990
U247	All	8 Aug 1990
U248	All	8 Aug 1990
U249	All	8 Aug 1990

a This table also does not include contaminated soil and debris wastes.

b The standard has been revised in the Third Third Final Rule.

c No land disposal standard has been revised in the Third Third Final Rule.

(continued)

## Appendix 4-7 (continued)

### *Part 2--Summary of Effective Dates of Land Disposal Restrictions for Contaminated Soil and Debris (CSD)*

	<b>Restricted hazardous waste in CSD</b>	<b>Effective date</b>
1.	Solvent-(F001-F005) and dioxin-(F020-F023 and F026-F028) containing soil and debris from CERCLA response of RCRA corrective actions.	8 Nov 1990
2.	Soil and debris not from CERCLA response or RCRA corrective actions contaminated with less than 1% total solvents (F001-F005) or dioxins (F020-F023 and F026-F028).	8 Nov 1990
3.	Soil and debris contaminated with California list HOCs from CERCLA response or RCRA corrective actions.	8 Nov 1990
4.	Soil and debris contaminated with California list HOCs not from CERCLA response or RCRA corrective actions.	8 July 1989
5.	All soil and debris contaminated with First Third wastes for which treatment standards are based on incineration.	8 Aug 1990
6.	All soil and debris contaminated with Second Third wastes for which treatment standards are based on incineration.	8 June 1991
7.	All soil and debris contaminated with Third Third wastes or, First or Second Third "soft hammer" wastes which had treatment standards promulgated in the Third Third rule, for which treatment standards are based on incineration, vitrification, or mercury retorting, acid leaching followed by chemical precipitation, or thermal recovery of metals; as well as all inorganic solids debris contaminated with D004-D011 wastes, and all soil and debris contaminated with mixed RCRA/radioactive wastes.	8 May 1993

**NOTE:**

1. Appendix VII is provided for the convenience of the reader.
2. Contaminated Soil and Debris Rule will be promulgated in the future.



## Appendix 4-8

### Schedule for Implementation of Air Emissions Standards (40 CFR 265.1082)

Facilities existing on 6 December 1995 which are required to comply with 40 CFR 265, Subparts I, J, and K.

Install and begin operation of all required control equipment by 6 December 1995. If it cannot be installed and operating by 6 December 1995 the owner and operator shall:

- install and begin operation as soon as possible but not later than 8 December 1997
- prepare an implementation schedule which is placed in the operating record by 6 December 1995.

Facilities which are required to comply with 40 CFR 265, Subparts I, J, and K due to a statutory or regulatory amendment shall:

Install and begin operation of all required control equipment by the effective date of the amendment. If it cannot be installed and operating by the effective date of the amendment the owner and operator shall:

- install and begin operation as soon as possible but not later than 30 mo after the amendment effective date
- prepare an implementation schedule which is placed in the operating record no later than the effective date of the amendment.

(NOTE: The Regional Administrator may elect to extend the implementation date at a facility on a case by case basis.)



<b>FACILITY:</b>	<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS WASTE MANAGEMENT</b> Fish and Wildlife Service	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> NA      C      RMA	<b>REVIEWER CHECKS:</b>		

## Section 5

### Pesticide Management

A. Applicability	1
B. Federal Legislation	1
C. State and Local Regulations	2
D. FWS/DOI Manuals	2
E. Key Compliance Requirements	2
F. Key Compliance Definitions	3
Guidance for Checklist Users	7

**The contents of this section are the minimum requirements the auditor must review. The auditor must also review applicable state and local regulations.**

## SECTION 5

### PESTICIDE MANAGEMENT

#### A. Applicability

This section applies to FWS facilities which use, store, or handle pesticides. Pesticides are regulated on the Federal level (U.S. Environmental Protection Agency (USEPA)) and the state level. As used in this handbook the terms pesticides encompasses pesticides, herbicides, and fungicides.

It must be noted that pesticides are by nature hazardous materials and are subject to hazardous material regulations.

#### B. Federal Legislation

- *The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)*. This act, as last amended in December 1991, 7 U.S. Code (USC) 136-136y, deals with the sale, distribution, transportation, storage, and use of pesticides. It requires the registration of new pesticides and, when pesticides are reregistered, requires that they will not present any unreasonable risks to human health or the environment, if used according to label directions.
- *The Endangered Species Act (ESA)* of 1973. The purpose of this act, 16 USC 1531-1547, et al, last amended in October 1988, is to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions for protection of endangered species (16 USC 1531(b)). Under ESA, the policy of Congress is that all Federal departments and agencies must seek to conserve endangered species and threatened species and must use their authorities in furtherance of the purposes of this act. Further, Federal agencies must cooperate with state and local agencies to resolve water resource issues in concert with conservation of endangered species (16 USC 1531(c)).
- Executive Order (EO) 12088. This EO, *Federal Compliance with Pollution Standards*, of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities it funds meet applicable Federal, state, and local environmental requirements or to correct situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.
- Federal regulations used to develop the checklist include:
  - EO 12088, *Federal Compliance with Pollution Control Standards*.
  - 29 CFR 1910, *Occupational Safety and Health Standards*.

- 40 CFR 152, *Pesticide Registration and Classification Procedures.*
- 40 CFR 165, *Regulations for the Acceptance of Certain Pesticides and Recommended Procedures for the Storage and Disposal of Pesticides and Pesticide Containers.*
- 40 CFR 166, *Exemption of Federal and State Agencies for Use of Pesticides Under Emergency Conditions.*
- 40 CFR 171, *Certification of Pesticide Applicators.*
- 50 CFR 402, *Interagency cooperation - Endangered Species Act of 1973, as amended.*

### **C. State/Local Requirements**

State pesticide regulatory programs are to be at least as stringent as FIFRA. State and local programs typically contain regulations which are tailored to an industry or activity which is prevalent or particularly sensitive in a state. State and local pesticide regulations in many cases provide more stringent standards or specifically identify a requirement which may be qualitatively regulated under the Federal program. State and local pesticide programs generally include regulations which address the following topics:

1. restrictions or requirements for the sale, distribution, or use of selected pesticides
2. disposal requirements for excess pesticides and pesticide wastes such as pesticide containers
3. restrictions on the control of specific animal or insect species
4. specifications for bulk pesticide storage tanks and storage facilities
5. operational requirements for selected application methods
6. recordkeeping and applicator certification requirements.

### **D. FWS/DOI Manuals**

No applicable manuals final as of the publication of this handbook.

### **E. Key Compliance Requirements**

- **Pesticide Application** - People applying restricted-use pesticides must be certified to apply restricted use pesticides. Contractors used for pest management must have current state certification for the types of applications to be performed. The application of pesticides must not jeopardize the existence of threatened or endangered species (40 CFR 171.9 and 50 CFR 402).
- **Pesticide Storage, Mixing, and Preparation Facilities** - Pesticide storage, mixing, and preparation activities must provide facilities and procedures to ensure safety of personnel. Facilities such as a ventilation system for all indoor pesticide mixing/preparation areas and an emergency deluge shower and eyewash station located to provide immediate access to all personnel performing mixing. Personal protective clothing and equipment needs to be provided and used by pest management personnel. (29 CFR 1910.133).

- **Highly Toxic Pesticide Storage and Use** - Storage facilities for pesticides and excess pesticides classed as highly toxic or moderately toxic, that are labeled DANGER, POISON, or with the skull and crossbones symbol, should meet specific structural, operational, and storage requirements. These include pesticides being kept in a dry, separate room with fire protection and not near food or feed, and in containers in good condition with plainly visible labels. There should be a decontamination facility and the local fire department, hospitals, public health officials, and police departments should be notified in writing that the pesticides are being stored (MP).
- **Pesticide Disposal** - Facilities are required to dispose of any pesticide, pesticide container, or pesticide residue in a manner consistent with labeling, not including open dumping or burning. Organic pesticides other than organic mercury, lead, cadmium, and arsenic compounds, must be disposed according to specific procedures. Options include incineration at an incinerator that meets air quality standards for gaseous emissions. Metallo-organic pesticides must be disposed of in a manner that facilitates the recovery of heavy metals (40 CFR 165.7).
- **Recordkeeping** - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

#### F. Key Compliance Definitions

- **Acute LD<sub>50</sub>** - a statistically derived estimate of the concentration of a substance that would cause 50 percent mortality to the test population under specified conditions (40 CFR 152.3).
- **Caution** - the human hazard signal word required on the front panel of a pesticide container determined by the Toxicity Category of the pesticide. All pesticide products meeting the criteria of Toxicity Category III or IV must bear on the front panel the signal word CAUTION (see Toxicity Category) (40 CFR 156.10(h)).
- **Certified Applicator** - any individual who is certified by the USEPA or the state to use or supervise the use of any restricted use pesticide covered by that individual's certification (7 CFR 110.2).
- **Commercial Applicator** - a certified applicator, other than a private applicator, who uses or supervises the use of any pesticide, for any purpose, on any property, or performs other pest control related activities (40 CFR 171.2).
- **Crisis Exemption** - this is utilized in an emergency condition when the time from discovery of the emergency to the time when the pesticide use is needed is insufficient to allow for the authorization of a specific quarantine exemption or public health exemption (40 CFR 166.2).
- **Danger** - the human hazard signal word required on the front panel of a pesticide container determined by the Toxicity Category of the pesticide. All pesticide products meeting the criteria of Toxicity Category I must bear on the front panel, the signal word DANGER (see Toxicity Category) (40 CFR 156.10(h)).

- *Imminent Hazard* - a situation that exists when the continued use of a pesticide during the time required for cancellation proceedings would be likely to result in unreasonable adverse effects on the environment or will involve unreasonable hazard to the survival of a species declared endangered by the Secretary of the Interior under Public Law (PL) 91-135 (40 CFR 165.1).
- *Management Practice (MP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- *Pesticide* - any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant, or disinfectant; and is further categorized into the following (40 CFR 165.1):
  1. Excess pesticides means all pesticides that cannot be legally sold pursuant to the Act or that are to be discarded.
  2. Organic pesticides means carbon-containing substances used as pesticides, excluding metallo-organic compounds.
  3. Inorganic pesticides means noncarbon-containing substances used as pesticides.
  4. Metallo-organic pesticides means a class of organic pesticides containing one or more metal or metalloid atoms in the structure.
- *Pesticide Product* - a pesticide in the particular form (including composition, packaging, and labeling) in which the pesticide is, or is intended to be, distributed or sold. This includes any physical apparatus used to deliver or apply the pesticide if distributed or sold with the pesticide (40 CFR 152.3).
- *Private Applicator* - a certified applicator who uses or supervises the use of any restricted use pesticide for purposes of producing any agricultural commodity (7 CFR 100.2).
- *Public Health Exemption* - this may be authorized in an emergency condition to control a pest that will cause a significant risk to human health (40 CFR 166.2).
- *Quarantine Exemption* - this may be authorized in an emergency condition to control the introduction or spread of any pest new to or not theretofore known to be widely prevalent or distributed within and throughout the United States and its territories (40 CFR 166.2).
- *Restricted-Use Pesticides* - pesticides designated for restricted use under the provisions of Section 3(d)(1)(c) of FIFRA (40 CFR 171.2).
- *Specific Exemption* - this exemption may be authorized in an emergency condition to avert (40 CFR 166.2):
  1. a significant economic loss
  2. a significant risk to endangered species, threatened species, beneficial organisms, or the environment.
- *Toxicity Category* - required warnings and precautionary statements are based on the Toxicity Category of the pesticide. The category is assigned on the basis of the highest hazard shown in the table listed in 40 CFR 156.10 (40 CFR 156.10(h)).



- *Warning* - the human hazard signal word required on the front panel of a pesticide container determined by the Toxicity Category of the pesticide. All pesticide products meeting the criteria of Toxicity Category II shall bear on the front panel the signal word WARNING (see 40 CFR 156.10 for listing of indicators necessary to meet specific criteria of toxicity categories) (40 CFR 156.10(h)).



**PESTICIDE MANAGEMENT**  
**GUIDANCE FOR CHECKLIST USERS**

	<b>REFER TO CHECKLIST ITEMS:</b>	<b>REFER TO PAGE NUMBER:</b>
All Facilities	5-1 through 5-6	5-11
Pesticide Applicators	5-7 through 5-9	5-15
Pesticide Applications	5-10 through 5-13	5-17
Storage/Mixing/Preparation Areas	5-14 through 5-20	5-19
Highly and Moderately Toxic Pesticides	5-21 through 5-28	5-21
Agricultural Pesticides	5-29 and 5-30	5-27
Disposal	5-31 through 5-36	5-29
Dining Facilities	5-37	5-33



## **PESTICIDE MANAGEMENT**

### **Records To Review**

- Records of pesticides purchased by the facility (purchase orders, inventory)
- Pesticide application records
- Description of the facility's pest control program
- Certification status of pesticide applicators
- Pesticide disposal manifests
- Contract files
- Any emergency exemption granted to the FWS by the USEPA

### **Physical Features To Inspect**

- Personnel protection equipment
- Pesticide application equipment
- Pesticide storage areas, including storage containers



**COMPLIANCE CATEGORY:  
PESTICIDE MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:  
July 1995**

**ALL FACILITIES**

**5-1.** The current status of any ongoing or unresolved consent orders, compliance agreements, notices of violation (NOVs), inter-agency agreements, or equivalent state enforcement actions is required to be examined (a finding under this checklist item will have the enforcement action/identifying information as the citation).

Determine if noncompliance issues have been resolved by reviewing a copy of the previous report, consent orders, compliance agreements, NOVs, inter-agency agreements, or equivalent state enforcement actions.

**5-2.** FWS facilities are required to comply with state and local pesticide regulations (EO 12088, Section 1-1).

Verify that the facility is complying with state and local requirements.

Verify that the facility is operating according to permits issued by the state or local agencies.

(NOTE: Issues typically regulated by state and local agencies include:

- applicator certification
- restricted-use pesticides
- application procedures
- banned pesticides
- disposal methods
- emergency application of pesticides due to public health threats.)

**5-3.** Facilities will meet regulatory requirements issued since the finalization of the handbook (a finding under this checklist item will have the citation of the new regulation as a basis of finding).

Determine if any new regulations concerning pesticides have been issued since the finalization of the handbook.

Verify that the facility is in compliance with newly issued regulations.

**COMPLIANCE CATEGORY:  
PESTICIDE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>5-4.</b> FWS facilities should report all NOV's to the Region and the Service Pollution Control Office (SPCO) (MP).</p>	<p>Determine if the facility has received an NOV relating to pesticides.</p> <p>Verify that the NOV was reported to the Region and the SPCO.</p>
<p><b>5-5.</b> All pesticides present on the facility must be registered or ruled exempt from the registration requirements (40 CFR 152.15 through 152.30).</p>	<p>Verify that pesticide products at the facility are registered unless the facility or product is considered exempt, such as the following:</p> <ul style="list-style-type: none"> <li>- certain biological control agents</li> <li>- certain human drugs</li> <li>- treated articles or substances such as paint treated with a pesticide</li> <li>- pheromones and pheromone traps</li> <li>- preservatives for biological specimens</li> <li>- vitamin hormone products</li> <li>- pesticide transferred between registered establishments operated by the same producer</li> <li>- a pesticide distributed or sold under an experimental use permit</li> <li>- a pesticide transferred solely for export</li> <li>- a pesticide distributed or sold under an emergency exemption.</li> </ul>
<p><b>5-6.</b> All facilities must comply with pesticide use requirements unless an emergency exemption has been granted by the USEPA (40 CFR 166.1, 166.2, 166.20, 166.28, 166.32, 166.45, and 166.50).</p>	<p>Verify that pesticides are used according to label instructions unless one or more of the following emergency conditions exist:</p> <ul style="list-style-type: none"> <li>- Specific exemptions may be authorized to avoid conditions of: <ul style="list-style-type: none"> <li>- significant economic loss</li> <li>- significant risk to threatened or endangered species</li> <li>- significant risk to beneficial organisms</li> <li>- significant risk to the environment.</li> </ul> </li> <li>- Quarantine exemptions may be authorized to control the introduction or spread of any pest new to or unknown to be widespread throughout the United States and its territories.</li> <li>- Public health exemptions may be authorized to control a pest that imposes significant risk to human health.</li> <li>- Crisis exemptions may be utilized when the time constraint between discovery, and implementation of pesticide use will not allow a specific, quarantine, or public health exemption to be issued.</li> </ul> <p>Verify that applications for exemptions are submitted to the Regional Administrator in writing and include:</p> <ul style="list-style-type: none"> <li>- a description of the pesticide</li> <li>- the proposed use</li> <li>- any alternative means of control and why those means are not feasible.</li> </ul>



**COMPLIANCE CATEGORY:  
PESTICIDE MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:  
July 1995**

**5-6. (continued)**

Verify that exemptions are issued for a specific length of time, as follows:

- no more than 1 yr for specific and public health exemptions
- for no longer than 3 yr for a quarantine permit, but it may be renewed
- no longer than 15 days (unless an application for another type of exemption has been submitted) for a crisis exemption.

Verify that any unexpected adverse affects from the use of a pesticide under exemption conditions are being reported to the USEPA.

Verify that a report summarizing the use of a pesticide under an exemption was submitted to the USEPA within 6 mo after the expiration of the exemption (3 mo for a crisis exemption).



**COMPLIANCE CATEGORY:  
PESTICIDE MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:  
July 1995**

**PESTICIDE  
APPLICATORS**

**5-7.** Persons applying restricted-use pesticides must be certified to apply restricted use pesticides (40 CFR 171.9).

**5-8.** Personnel routinely applying any pesticides should be trained in safety procedures and application procedures (MP).

**5-9.** Health monitoring should be provided for government personnel applying pesticides other than bug bombs, space sprays, and no-pest strips (MP).

Determine if pesticide applicators are trained and/or certified.

Verify that training recertification is scheduled and performed as required to maintain certification and that certification is relevant to the pest management activities undertaken.

Verify the certification status of contractors used for pest management.

(NOTE: Check the list of restricted-use pesticides in Appendix 5-1.)

Determine if personnel at the facility routinely apply pesticides.

Verify that personnel are trained in appropriate handling and use procedures.

Verify that all pest management personnel have received baseline physical examinations within 30 days of starting pest management work.

Verify that pest management personnel receive additional physical examinations once each year.

Verify that cholinesterase tests are given to pest management personnel working regularly with pesticides which contain organophosphates or N-alkyl-carbamates.

(NOTE: The Safety Office should be consulted about health concerns related to the pesticides in use at the facility..)



**COMPLIANCE CATEGORY:  
PESTICIDE MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:  
July 1995**

**PESTICIDE  
APPLICATION**

**5-10.** Facilities must ensure that the use of pesticides does not jeopardize the existence of threatened or endangered species (50 CFR 402.01 para 2(d)).

**5-11.** Public safety should be ensured when applying or using pesticides (MP).

**5-12.** Certified applicators of restricted-use pesticides are required to keep application records (7 CFR 110.3).

Determine if surveys have been conducted to identify the presence of threatened or endangered species in areas where pesticides are used.

Determine what measures are taken to ensure that threatened or endangered species are not impacted.

Verify that applications are made according to label instructions regarding the protection of endangered species.

Verify the elimination of hazardous exposure to the general public by checking for the following:

- appropriate signs for treatment area are posted
- scheduling for low use periods or restricted usage for a number of days
- water use restrictions and reentry times are followed according to the pesticide labels.

Verify that the certified applicators keep records with the following information:

- the brand or product name and the USEPA registration number of the restricted use pesticide that was applied
- the total amount of the restricted-use pesticide that was applied
- the location of the application, the size of the area treated, and the crop, commodity, stored product, or site to which a restricted use pesticide was applied
- the month, day, and year of the application
- the name and certification number of the certified applicator who applied to supervised the application.

Verify that the following information is kept for applications of restricted-use pesticides made on the same day in a total areas of less than one-tenth of an acre:

- brand or product name and USEPA registration number
- total amount applied
- location, designated as spot application followed by a concise description of location and treatment
- the month, day, and year of application.

Verify that the information is recorded within 14 days of the application.

COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS: July 1995
5-12. (continued)	<p>Verify that these application records are retained for 2 yr.</p> <p>Verify that commercial applicators provides a copy of the records to the facility within 30 days.</p> <p>(NOTE: State and local stadnads may differ for this requirement.)</p>
5-13. Records should be maintained of each application of a pesticide, whether performed by facility staff or contract labor, and retained at the facility (MP).	<p>Verify that records are kept on file for a minimum of 2 yr.</p>

**COMPLIANCE CATEGORY:  
PESTICIDE MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:  
July 1995**

**STORAGE/MIXING/  
PREPARATION  
AREAS**

**5-14.** Facilities are required to store any pesticide, pesticide container, or pesticide residue according to specific restrictions (MP).

**5-15.** Security measures should assure that only authorized persons can access pesticide storage, mixing, and preparation areas (MP).

**5-16.** Pesticide storage, mixing, and preparation facilities must provide facilities and procedures to ensure safety of personnel (29 CFR 1910.133).

(NOTE: Storage areas must also meet the general requirements for the storage of hazardous materials found in 29 CFR 1910.106, see Section 3, Hazardous Materials Management).

Verify that pesticides, pesticide containers, and/or pesticide residues are stored such that it is not inconsistent with labeling.

(NOTE: This MP is based on recommendations found in 40 CFR 165.7. This recommendation is a requirement under OSHA, see *Hazardous Materials Management*.)

Verify that a climb-resistant fence completely encloses the storage, mixing, or preparation area.

Verify that vehicles used to transport pesticides have locking compartments.

Determine if a ventilation system is specifically provided for all indoor pesticide mixing/preparation areas.

Verify that an emergency deluge shower and eyewash station are located to provide immediate access to all personnel performing mixing.

Verify that personal protective clothing and equipment is provided and used by pest management personnel. The following equipment depends upon magnitude and type of operations:

- respirators
- masks
- gloves
- safety shoes
- coveralls
- specialized personal protective equipment for fumigation.

Verify that operations include health and safety procedures emphasizing good work habits, reduction or elimination of hazards, and use of personal protective equipment.

**COMPLIANCE CATEGORY:  
PESTICIDE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>5-17.</b> A spill containment system constructed of impervious materials should provide containment for pesticide storage, mixing, preparation and management areas (MP).</p>	<p>Verify that there is curbing around the required areas.</p> <p>Determine if there are drains or cracks in floors.</p> <p>Determine if pest management shop personnel are familiar with spill response procedures.</p> <p>Verify that spill response procedures are written and understood by staff.</p>
<p><b>5-18.</b> Storage facilities for pesticides should have ventilation at a rate of 10 air changes/hour (MP).</p>	<p>Verify that storage facilities for pesticides have ventilation at a rate of 10 air changes/hour.</p>
<p><b>5-19.</b> Storage facilities for pesticides should have separate drainage systems and fire extinguishers (MP).</p>	<p>Verify that fire extinguishers are installed near the door of pesticide storage rooms.</p> <p>Verify that the drainage systems are separated from the regular systems.</p>
<p><b>5-20.</b> Pesticide storage areas should be inspected quarterly by certified applicator personnel and safety and fire prevention officer (MP).</p>	<p>Verify that pesticide storage areas are inspected quarterly.</p>



**COMPLIANCE CATEGORY:  
PESTICIDE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>HIGHLY AND MODERATELY TOXIC PESTICIDES</b></p> <p><b>5-21.</b> Storage facilities for pesticides and excess pesticides classed as highly toxic or moderately toxic and are required to be labeled with DANGER, POISON, WARNING, or the skull and cross-bones symbol should meet specific structural requirements (MP).</p> <p><b>5-22.</b> The storage of pesticides and excess pesticides classed as highly toxic or moderately toxic and are required to be labeled with DANGER, POISON, WARNING, or the skull and cross-bones symbol should meet specific operational requirements (MP).</p>	<p>Verify that storage is in a dry, separate room, building, or covered area where fire protection is provided.</p> <p>Verify that, when relevant and practicable, the entire storage facility is secured by a climb-proof fence and the doors and gates are kept locked.</p> <p>Verify that pesticides are not stored near food or feed.</p> <p>(NOTE: These MPs are based on recommendations found in 40 CFR 165.10(c)(1).)</p> <p>Verify that pesticide containers are stored with the label plainly visible.</p> <p>Verify that all containers are in good condition.</p> <p>Verify that the lids and bungs on metal or rigid plastic containers are tight.</p> <p>Verify that the pesticides are segregated.</p> <p>Verify that a complete inventory is kept indicating the number and identity of containers in a storage unit.</p> <p>Verify that containers are regularly inspected for corrosion and leaks and that absorbent material is available for spill cleanup.</p> <p>Verify that diluted oil based pesticides are stored separately from other materials since they are flammable.</p> <p>Verify that excess pesticides and containers are segregated.</p> <p>(NOTE: These MPs are based on recommendations found in 40 CFR 165.10(d).)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>5-23.</b> Pest management programs which use pesticides classed as highly toxic or moderately toxic and are required to bear the signal words DANGER, POISON, WARNING, or the skull and crossbones symbol on the label should have decontamination facilities (MP).</p> <p><b>5-24.</b> Equipment used for pesticides applications may not be removed from a decontamination site unless thoroughly decontaminated (MP).</p>	<p>Determine if facilities are available for personnel decontamination and where they are located.</p> <p>Determine if facilities are available for the decontamination of equipment, including vehicles which have been used for pesticide applications.</p> <p>Verify that berms, curbing, surfaces, and catchment drains which are used to impound washwater resulting from decontamination are impervious.</p> <p>Verify that drains impound washwater and do not connect to sanitary sewer or stormwater systems.</p> <p>Verify that the procedure for disposal of washwater resulting from decontamination activities is the same as for excess pesticides.</p> <p>(NOTE: These MPs are based on recommendations found in 40 CFR 165.10(c)(3) and 165.10(c)(4).)</p> <p>Verify that, prior to removal from a site, vehicles are decontaminated.</p> <p>(NOTE: This MP is based on recommendations found in 40 CFR 165.10(c)(2) and 165.10(e)(1)(v).)</p>

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**5-25.** Storage of pesticides and excess pesticides that are classed as highly toxic or moderately toxic and are required to be labeled DANGER, POISON, WARNING, or with the skull and crossbones symbol should meet specific requirements (MP).

Verify that the site location, where possible, is in an area where flooding is unlikely and where hydrogeologic conditions prevents contamination of any water system by runoff or percolation by:

- inspecting areas surrounding facilities and determining proximity to surface water
- noting location relative to floodplains, depth of groundwater, and general soil types and typical permeabilities
- verifying that the spill management system is in existence.

Verify that an environmental monitoring system exists for facilities which do not have spill management system when the facility handles large quantities of pesticides and is located near sensitive environmental receptor. The reviewer should:

- note approximate quantity of pesticides and location of sensitive environmental receptors
- check whether groundwater, or surface water, or air monitoring program exists to determine any effects caused by pesticide storage, mixing and preparation
- inspect facility operations and layout to determine if operations are likely to allow runoff of water which may have contacted pesticides.

Verify that, when needed, drainage from the site is contained by natural or artificial barriers or dikes.

(NOTE: These MPs are based on recommendations found in 40 CFR 165.10(b).)

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Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

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5-26. Facilities which store/use pesticides that are classed as highly toxic or moderately toxic and are required to bear the signal words DANGER, POISON, WARNING, or the skull and crossbones symbol should provide facilities and procedures to ensure the safety of personnel (MP).

Verify that no food consumption, drinking, smoking, or tobacco use is undertaken in any area where pesticides are present.

Verify that the following practices are performed in pest management operations:

- persons handling pesticides keep hands away from mouths and eyes and wear rubber gloves during all pesticide handling
- persons handling pesticides wash hands immediately upon completion of working with pesticides and always prior to eating, smoking, or using toilet facilities
- persons handling concentrated pesticides wear protective clothing which is removed if found to be contaminated
- a stock of protective clothing is available
- self-contained breathing apparatus and impermeable suits are available when handling pesticides which present the potential of being absorbed through the skin
- inspections are made once a month to determine if any pesticide containers are leaking
- pesticide containers are inspected for leakage prior to handling
- unauthorized persons are not allowed in storage areas.

Verify that the following accident prevention measures are done:

- containers are not manhandled
- unauthorized persons are not allowed in the storage area
- pesticides are not stored next to food or feed or other articles intended for consumption by humans or animals
- all vehicles are inspected prior to departure.

(NOTE: These MPs are based on recommendations found in 40 CFR 165.10(e) and 165.10(f).)

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REQUIREMENTS:**

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**5-27.** Pesticide storage facilities and equipment which contain or use pesticides classed as highly toxic or moderately toxic and are labeled DANGER, POISON, WARNING, or with the skull and crossbones symbol should have signs and safety procedures posted (MP).

Verify that signs which read DANGER, POISON, PESTICIDE STORAGE, are placed on or near entries to storage facilities.

Verify that safety precautions and accident prevention measures are posted.

Verify that an inventory of pesticides is displayed outside of the storage facility identifying all chemicals in storage.

Verify that mobile equipment used for pesticide applications is labeled CONTAMINATED WITH PESTICIDES.

(NOTE: These MPs are based on recommendations found in 40 CFR 165.10(c)(2) through 165.10(c)(3), 165.10(e), and 165.10(g)(2).)

**5-28.** Where large quantities of pesticides classed as highly toxic or moderately toxic and labeled DANGER, POISON, WARNING, or with the skull and crossbones symbol are being stored, or other conditions warrant, the local fire department, hospitals, public health officials, and police department should be notified in writing that pesticides are being stored in the event of a fire (MP).

Verify that notification has been submitted and includes a statement of the hazards that pesticides may be present during a fire.

Verify that a floor plan of the storage facility indicating the location of the different pesticide classifications has been submitted to the fire department.

Verify that the fire chief has the home telephone numbers of the person(s) responsible for the pesticide storage facility.

(NOTE: These MPs are based on recommendations found in 40 CFR 165.10(g)(1).)



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**AGRICULTURAL  
PESTICIDES**

**5-29.** Agricultural pesticides must be applied in a manner that workers or other persons, except those knowingly involved in the application, are not exposed either directly or through drift (40 CFR 170.3(a) and 170.4(c)).

**5-30.** Workers not wearing protective clothing shall not be allowed to enter a field treated with sprays until specific conditions are met (40 CFR 170.3(b) and 170.4(c)).

Determine if the facility applies agricultural pesticides.

Verify that the area being treated is vacated by unprotected persons.

(NOTE: These requirements do not pertain to:

- mosquito abatement treatment and related public pest control programs
- greenhouse treatments which are applied in accordance with labeling directions and restrictions
- livestock and other animal treatments which are applied in accordance with labeling directions and restrictions
- treatment of golf courses and similar nonagricultural areas which are applied in accordance with labeling directions and restrictions.)

Verify that workers are warned when a field is to be treated and when a field has been treated.

Verify that workers without protective clothing do not enter fields that have been sprayed until sprays have been dried or dusts have settled.

Verify that, if the following pesticides are used, the indicated reentry times are observed:

- ethyl parathion: 48 h
- methyl parathion: 48 h
- guthion: 24 h
- demeton: 48 h
- azodrin: 48 h
- phosalone: 24 h
- carbophenothion: 48 h
- metasystox-R: 48 h
- EPN: 24 h
- bidrin: 48 h
- endrin: 48 h
- ethion: 24 h.

(NOTE: These requirements do not pertain to:

- mosquito abatement treatment and related public pest control programs
- greenhouse treatments which are applied in accordance with labeling directions and restrictions
- livestock and other animal treatments which are applied in accordance with labeling directions and restrictions
- treatment of golf courses and similar nonagricultural areas which are applied in accordance with labeling directions and restrictions.)





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**DISPOSAL**

**5-31.** Facilities are required to dispose of any pesticide, pesticide container, or pesticide residue according to specific restrictions (40 CFR 165.7).

Verify that pesticides, pesticide containers, and/or pesticide residues are disposed of such that:

- disposal is consistent with labeling
- open dumping of pesticides or pesticide containers is not done
- open burning is not done except when allowed by state and local regulation
- water dumping or ocean dumping does not occur.

**5-32.** Organic pesticides, except organic mercury, lead, cadmium, and arsenic compounds should be disposed of according to specific procedures (MP).

Determine if the facility uses organic pesticides.

Verify that organic pesticides are disposed of through incineration at an incinerator which meets the air quality standards for gaseous emissions, or in a specially designated landfill if incineration is not available, or by another approved method.

(NOTES: Municipal solid waste incinerators may be allowed to be used to incinerate pesticides and pesticide containers if they meet criteria of the state.)

(NOTE: These MPs are based on guidelines found in 40 CFR 165.8 and 165.9.)

**5-33.** Metallo-organic pesticides, except organic mercury, lead, cadmium, or arsenic compounds should be disposed of according to specific procedures (MP).

Determine if the facility uses metallo-organic pesticides.

Verify that metallo-organic pesticides are subjected to an appropriate chemical or physical treatment to recover the heavy metals from the hydrocarbon structure prior to disposal.

Verify that metallo-organic pesticides are disposed of through incineration at an approved incinerator, or in a specially designated landfill, or by another approved method.

(NOTE: These MPs are based on guidelines found in 40 CFR 165.8 and 165.9.)

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>5-34.</b> Organic mercury, lead, cadmium, arsenic, and all inorganic pesticides should be disposed of according to specific procedures (MP).</p>	<p>Determine if the facility uses organic mercury, lead, cadmium, arsenic, or any inorganic pesticides.</p> <p>Verify that these pesticides are converted to a nonhazardous compound and the heavy metal resources are recovered.</p> <p>Verify that, if chemical deactivation facilities are not available, these pesticides are encapsulated and buried in a specially designated landfill and records sufficient to permit location and retrieval are maintained.</p> <p>Determine if an alternate method of disposal has been approved.</p> <p>(NOTE: These MPs are based on guidelines found in 40 CFR 165.8 and 165.9.)</p>
<p><b>5-35.</b> Containers should be disposed of according to their classification as either a Group I, Group II, or Group III container (MP).</p>	<p>Determine which of the following types of containers the facility has onsite:</p> <ul style="list-style-type: none"> <li>- Group I Containers: combustible containers which formerly contained organic or metallo-organic pesticides</li> <li>- Group II Containers: noncombustible containers which formerly held organic or metallo-organic pesticides</li> <li>- Group III Containers: containers (both combustible and noncombustible) which formerly held organic mercury, lead, cadmium, or arsenic or inorganic pesticides.</li> </ul> <p>Verify that Group I containers are disposed of in an incinerator or buried in a specially designated landfill.</p> <p>(NOTE: Small quantities of Group I containers may be burned in open fields by the user of the pesticide when allowed by the state.)</p> <p>Verify that Group II containers are triple rinsed.</p> <p>Verify that Group II containers in good condition are returned to the manufacturer, formulator, or drum reconditioner to reuse with the same chemical class of pesticides.</p> <p>Verify that Group II containers which are going to be transported to a facility for recycle as scrap metal or for disposal are punctured.</p> <p>Determine if rinsed Group II containers are crushed and disposed of in a landfill according to state or local requirements.</p> <p>Verify that unrinsed Group II containers are disposed of in a specially designated landfill or incinerated.</p> <p>Verify that Group III containers which are not rinsed are encapsulated and disposed of in a specially designated landfill.</p>

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**5-35. (continued)**

(NOTE: Group III containers which are rinsed may be disposed of in a sanitary landfill.)

(NOTE: These MPs are based on guidelines found in 40 CFR 165.8 and 165.9.)

**5-36.** Pesticide residues and rinse liquids should be added to spray mixtures or disposed of according to their pesticide type (MP).

Verify that pesticide residues or rinse liquids are reused.

Verify that, if they are not reused, they are disposed of according to their pesticide type.

(NOTE: These MPs are based on guidelines found in 40 CFR 165.8 and 165.9.)



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**DINING FACILITIES**

**5-37.** Dining facilities should be notified at least 24 h in advance of a pesticide application (MP).

Verify that food services personnel are notified of scheduled applications.



## Appendix 5-1

### Restricted Use Pesticides (40 CFR 152.175)

The following uses of pesticide products containing the active ingredients specified below have been classified for restricted use and are limited to use by or under the direct supervision of a certified applicator.

Active Ingredient	Formulation	Use Pattern	Classification	Criteria Influencing Restriction
Acrolein	As sole active ingredient. No mixtures registered.	All uses.	Restricted	Inhalation hazard to humans. Residue effects on avian species and aquatic organisms.
Acrylonitrile	In combination with carbon tetrachloride. No registrations as the sole active ingredient.	*do	do	Other hazards-accident history of acrylonitrile and carbon tetrachloride products.
Aldicarb	As sole active ingredient. No mixtures registered.	Ornamental uses (indoor and outdoor). Agricultural crop uses.	do Under further evaluation.	Other hazards-accident history.
Allyl alcohol	All formulations.	All uses.	Restricted	Acute dermal toxicity.
Aluminum phosphide	As sole active ingredient. No mixtures registered.	do	do	Inhalation hazard to humans.
Azinphosmethyl	All liquids with a concentration greater than 13.5%.	do	do	do
	All other formulations.	do	Under further evaluation.	
Calcium cyanide	As sole active ingredient. No mixture registered.	do	Restricted	do
*do means same as above.				

(continued)

# Appendix 5-1 (continued)

Active Ingredient	Formulation	Use Pattern	Classification	Criteria Influencing Restriction
Carbofuran	All concrete suspensions and wettable powders 40% and greater.	do	do	Acute inhalation toxicity.
	All granular formulations.	Rice	Under evaluation.	
	All granular and fertilizer formulations.	All uses except rice.	do	
Chlorfenvinphos	All concentrate solutions or emulsifiable or concentrates 21% and greater.	All uses (domestic and nondomestic).	Restricted	Acute dermal toxicity.
Chloropicrin	All formulations greater than 2%.	All uses.	Restricted	Acute inhalation toxicity
	All formulations.	Rodent control	Restricted	Hazard to non-target organisms.
	All formulations 2% and less.	Outdoor uses (other than rodent control).	Unclassified	
Clonitralid	All wettable powders 70% and greater.	All uses.	do	Acute inhalation toxicity.
	All granulars and wettable powders.	Molluscide uses.	do	Effects on aquatic organisms.
	Pressurized sprays 0.55% and less.	Hospital antiseptics.	Unclassified	
Cycloheximide	All formulations greater than 4%.	All uses.	Restricted	Acute dermal toxicity.
	All formulations 0.027% to 4%.	All uses.	Under evaluation.	
	All formulations 0.027% and less.	Domestic uses.	Unclassified	
*do means same as above.				

(continued)



# Appendix 5-1 (continued)

Active Ingredient	Formulation	Use Pattern	Classification	Criteria Influencing Restriction
Demeton	1% fertilizer formulation, 1.985% granular.	All uses including domestic uses.	Restricted	Domestic uses: Acute oral toxicity. Acute dermal toxicity. Nondomestic outdoor uses. Residue effects on avian and mammalian species.
	All granular formulations emulsifiable concentrates and concentrated solutions.	All uses.	do	Acute dermal toxicity. Residue effects on mammalian and avian species.
Dicrotophos	All liquid formulations 8% and greater.	All uses.	Restricted	Acute dermal toxicity; residue effects on avian species (except for tree injections).
Dioxathion	All concentrate solutions or emulsifiable concentrates <sup>2</sup> greater than 30%.	All uses.	Restricted	Acute dermal toxicity.
	Concentrate solutions or emulsion concentrates <sup>2</sup> 30% and less and wettable powders 25% and less.	Livestock and agricultural uses (nondomestic uses only).	Unclassified	
	All solutions <sup>2</sup> 3% and greater.	Domestic	Restricted	do
	3% and greater 2.5% solutions <sup>2</sup> with toxaphene and malathion.	All uses.	Under evaluation.	
*do means same as above.				

(continued)

# Appendix 5-1 (continued)

Active Ingredient	Formulation	Use Pattern	Classification	Criteria Influencing Restriction
Disulfoton	All emulsifiable concentrates 65% and greater, all emulsifiable concentrates and concentrate solutions 21% and greater with fensulfothion 43% and greater, all emulsifiable concentrates 32% and greater in combination with 32% fensulfothion and greater.	do	Restricted	do  Acute inhalation toxicity.
	Nonaqueous solution 95% and greater.			
	Granular formulations 10% and greater.	Commercial seed treatment.	Restricted	Acute dermal toxicity.
Endrin		Indoor uses (greenhouse).	do	Acute inhalation toxicity.
	All emulsions, dusts, wettable powders, pastes, and granular formulations 2% and above.	All uses.	Restricted	Acute dermal toxicity. Hazard to nontarget organisms.
EPN	All concentrations less than 2%.	do	do	Hazard to non-target organisms.
	All liquid and dry formulations greater than 4%.	All uses.	Restricted	Acute dermal toxicity; acute inhalation toxicity; residue effects on avian species.
		Aquatic uses.	Restricted	Effects on aquatic organisms.
*do means same as above.				

(continued)

# Appendix 5-1 (continued)

Active Ingredient	Formulation	Use Pattern	Classification	Criteria Influencing Restriction
Ethoprop	Emulsifiable concentrates 40% and greater.	do	do	Acute dermal toxicity.
	All granular and fertilizer formulations.	do	Under evaluation.	
Ethyl parathion	All granular and dust formulations greater than 2% fertilizer formulations, wettable powders, emulsifiable concentrates, concentrated suspensions, concentrated solutions. Smoke fumigants.	do	Restricted	Inhalation hazard to humans. Acute dermal toxicity. Residue effects or mammalian, aquatic, avian species. Inhalation hazard to humans.
	Dust and granular formulations 2% and below.	do	do	Other hazards-accident history.
		do	do	
Fenamiphos	Emulsifiable concentrates 35% and greater.	do	do	Acute dermal toxicity.
Fensulfothion	Concentrate solutions 63% and greater, all emulsifiable concentrates and concentrate solutions 43% and greater with disulfoton 21% and greater all emulsifiable concentrates 32% and greater in combination with disulfoton 32% and greater.	do	Restricted.	do  Acute inhalation toxicity.
	Granular formulations 10% and greater.	Indoor uses (greenhouse).	do	do
Fluoroacetamide/1081	As sole active ingredient in baits. No mixtures registered.	All uses.	Restricted.	Acute oral toxicity.
*do means same as above.				

(continued)

# Appendix 5-1 (continued)

Active Ingredient	Formulation	Use Pattern	Classification	Criteria Influencing Restriction
Fonofos	Emulsifiable concentrates 44% and greater.	All uses.	do	Acute dermal toxicity.
	Emulsifiable concentrates 12.6% and less with pebulate 50.3% and less.	Tobacco	Unclassified	
Hydrocyanic acid	As sole active ingredient. No mixtures registered.	do	do	Inhalation hazard to humans.
Methamidophos	Liquid formulations 40% and greater.	All uses.	Restricted	Acute dermal toxicity; residue effects on avian species.
	Dust formulations 2.5% and greater.	All uses.	Restricted	Residual effects on avian species.
Methidathion	All formulations.	All uses except stock safflower and sunflower.	Restricted	Residue effects on avian species.
	All formulations.	Nursery stock, safflower, and sunflower.	Unclassified	Residue effects on avian species.
*do means same as above.				

(continued)

# Appendix 5-1 (continued)

Active Ingredient	Formulation	Use Pattern	Classification	Criteria Influencing Restriction
Methomyl	As sole active ingredient in 1% to 2.5 baits (except 1% fly bait).	Nondomestic outdoor agricultural crops, ornamental and turf. All other registered uses.	Restricted.	Residue effects on mammalian species.
	All concentrated solution formulations.	do	do	Other hazards-accident history.
	90% wettable powder formulations (not in water soluble bags).	do	do	do
	90% wettable powder formulation in water soluble bags.	do	Unclassified	
	All granular formulations.	do	do	
	25% wettable powder formulations.	do	do	
	In 1.24% to 2.5% dusts as sole active ingredient and in mixtures with fungicides and chlorinated hydrocarbon, inorganic phosphate and biological insecticides.	do	do	
Methylbromide	All formulations in containers greater than 1.5 lb.	All uses.	Restricted	Other hazards-accident history.
	Containers with not more than 1.5 lb of methyl bromide with 0.25% to chlorpicrin as an indicator.	Single applications (nondomestic use) for soil treatment in closed systems.	Unclassified	
	Containers with not more than 1.5 lb having no indicator.	All uses.	Restricted	do
*do means same as above.				

(continued)

# Appendix 5-1 (continued)

Active Ingredient	Formulation	Use Pattern	Classification	Criteria Influencing Restriction
Methyl parathion	All dust and granular formulations less than 5%.	do	do	Other hazards-accident history. All foliar applications restricted based on residue effects on mammalian and avian species.
	Microencapsulated. All dust and granular formulations 5% and greater and all wettable powders and liquids.	do	do	Residue effects on avian species. Hazard to bees. Acute dermal toxicity. Residue effects on mammalian and avian species.
Mevinphos	All emulsifiable concentrates and liquid concentrates.	do	do	do
	Psycodid filter fly liquid formulations.	do	do	Acute dermal toxicity.
	2% dusts.	do	do	Residue effects on mammalian and avian species.
Monocrotophos	Liquid formulations 19% and greater.	do	do	Residue effects on avian species. Residue effects on mammalian species.
	Liquid formulations 55% and greater.	do	do	Acute dermal toxicity. Residue effects on avian species. Residue effects on mammalian species.
*do means same as above.				

(continued)

# Appendix 5-1 (continued)

Active Ingredient	Formulation	Use Pattern	Classification	Criteria Influencing Restriction
Nicotine (alkaloid)	Liquid and dry formulations 14% and above.	Indoor (green-house)	Restricted	Acute inhalation toxicity.
	All formulations.	Applications to cranberries	Restricted	Effects on aquatic organisms.
	Liquid and dry formulations 1.5% and less.	All uses (domestic and nondomestic).	Unclassified	
Paraquat (dichloride) and paraquat bis(methylsulfate)	All formulations and concentrations except those listed below.	All uses.	Restricted	Other hazards. Use and accident history, human toxicological data.
	Pressurized spray formulations containing 0.44% Paraquat bis(methyl sulfate) and 15% petroleum distillates as active ingredients.	Spot weed and grass control.	do	
	Liquid fertilizers containing concentrations of 0.025% paraquat dichloride and 0.03% atrazine; 0.03% paraquat dichloride and 0.37% atrazine, 0.04% paraquat dichloride and 0.49% atrazine.	All uses.	Unclassified	
Phorate	Liquid formulations 65% and greater.	do	Restricted	Acute dermal toxicity. Residue effects on avian species (applies to foliar applications only). Residue effects on mammalian species (applies to foliar application only).
	All granular formulations.	Rice	Restricted	Effects on aquatic organisms.
*do means same as above.				

(continued)

# Appendix 5-1 (continued)

Active Ingredient	Formulation	Use Pattern	Classification	Criteria Influencing Restriction
Phosacetim	Baits 0.1% and greater.	All uses.	Restricted	Hazard to nontarget species. Residue effects on mammalian species. Residue effects on avian species.
Phosphamidon	Liquid formulations 75% and greater.	do	do	Acute dermal toxicity. Residue effects on mammalian species. Residue effects on avian species.
	Dust formulations 1.5% and greater.	do	do	Residue effects on mammalian species.
Picloram	All formulations and concentrations except tordon 101R.	do	do	Hazard to nontarget organisms (specifically nontarget plants both crop and non-crop).
	Tordon 101 R forestry herbicide containing 5.4% picloram and 20.9% 2, 4-D.	Control of unwanted trees by cut surface treatment.	Unclassified	
Sodium cyanide <sup>3</sup>	All capsules and ball formulations.	All uses.	Restricted	Inhalation hazard to humans.
Sodiumfluoroacetate	All solutions and dry baits.	do	do	Acute oral toxicity. Hazard to nontarget organisms. Use and accident history.
*do means same as above.				

(continued)



# Appendix 5-1 (continued)

Active Ingredient	Formulation	Use Pattern	Classification	Criteria Influencing Restriction
Strychnine	All dry baits pellets and powder formulations greater than 0.5%.	do	do	Acute oral toxicity. Hazard to nontarget avian species. Use and accident history.
	All dry baits pellets and powder formulations.	All uses calling for burrow builders.	do	Hazard to nontarget organisms.
	All dry baits, and pellets, and powder formulations 0.5% and below.	All uses except subsoil.	do	do
	do	All subsoil uses.	Unclassified	do
Sulfotepp	Sprays and smoke generators.	All uses.	Restricted	Inhalation hazard to humans.
Tepp	Emulsifiable concentrate formulations.	do	do	Inhalation hazard to humans. Dermal hazard to humans. Residue effects on mammalian and avian species.
Zinc Phosphide	All formulations 2% and less.	All domestic uses and nondomestic uses in and around buildings.	Unclassified	
	All dry formulations 60% and greater.	All uses.	Restricted	Acute inhalation toxicity.
	All bait formulations.	Nondomestic outdoor uses (other than around buildings).	Restricted	Hazard to nontarget organisms.
	All dry formulation 10% and greater.	Domestic uses.	Restricted	Acute oral toxicity.
*do means same as above.				

(continued)



<b>FACILITY:</b>	<b>COMPLIANCE CATEGORY:</b> <b>PESTICIDE MANAGEMENT</b> Fish and Wildlife Service	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> NA   C   RMA	<b>REVIEWER COMMENTS:</b>		

## SECTION 6

### PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT

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**The contents of this section are the minimum requirements the auditor must review. The auditor must also review applicable state and local regulations.**

## SECTION 6

### PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT

#### A. Applicability

This section applies to FWS facilities which store, transport, dispose of, or utilize petroleum based fuels, oils, or lubricants (POL). This section presents review action items that respond to regulations, procedures, and organizational mechanisms designed to prevent or limit the accidental release of POL materials to surface water, groundwater, or soils. Procedures designed to review the control of volatile organic compounds (VOCs) from POL sources are addressed in Section 1, Air Emissions Management.

This section covers POL management of bulk storage tanks, organizational tanks, pipeline delivery systems, truck fill stands, and immediate operating storage areas. POL materials addressed include petroleum, diesel fuel, and lubricating oils. The storage of POL materials in underground storage tanks (USTs) is addressed in Section 9, Underground Storage Tank (UST) Management.

#### B. Federal Legislation

- *The Water Quality Improvement Act of 1974.* This law was the primary Federal law governing the discharge of oil into navigable waters. This regulation prohibits the discharge of harmful quantities of oil into navigable waters. 40 Code of Federal Regulations (CFR) 110, *Protection of Environment - Discharge of Oil*, defines harmful quantities as those discharges which will cause a sheen or discoloration of the surface of the water or a sludge or emulsion to be deposited beneath the surface of the water.
- *The Federal Water Pollution Control Act.* This act, commonly known as the *Clean Water Act* (CWA), as amended 4 February 1987, 33 U.S. Code (USC) 1251-1387, Public Law (PL) 100-4, governs the control of water pollution in the nation. The objective of the act is to restore and maintain the chemical, physical and biological integrity of the nation's waters. Federal agencies are required to comply with all Federal, state, interstate, and local water pollution control requirements both substantively and procedurally (33 USC 1323(a)).
- *The Oil Pollution Act (OPA) of 1990.* This law, Public Law (PL) 301-308 (33 USC 2701-2761, et. al.) as amended, requires the prevention of oil pollution into navigable waters by tank vessels.
- *The Resource Conservation and Recovery Act (RCRA), Subtitle C.* This law, PL 98-616 (USC 6921-6939b), establishes standards and procedures for the handling, storage, treatment, and disposal of hazardous waste. Specifically, RCRA prohibits the placement of bulk or noncontainerized liquid hazardous waste or free liquids containing hazardous waste into a landfill. It also prohibits the land disposal of specified wastes and disposal of hazardous waste through underground injection within 1/4 mi [0.40 km] of an underground source of drinking water.

- Executive Order (EO) 12088, *Federal Compliance with Pollution Standards*. This EO of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements or to correct situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.
- Federal regulations used to develop the checklist include:
  - EO 12088, *Federal Compliance with Pollution Control Standards*.
  - 33 CFR 154, *Facilities Transferring Oil or Hazardous Materials in Bulk*.
  - 33 CFR 158, *Reception Facilities for Oil, noxious Liquid Substances, and Garbage*.
  - 40 CFR 110, *Discharge of Oil*.
  - 40 CFR 112, *Oil Pollution Prevention*.
  - 40 CFR 266, *Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities*.
  - 40 CFR 279, *Standards for the Management of Used Oil*.
  - 49 CFR 194, *Response Plans for Onshore Oil Pipelines*.
  - 49 CFR 195, *Transportation of Hazardous Liquids by Pipeline*.

### C. State/Local Regulations

Many states and some major metropolitan and regional planning agencies have developed legislation and implemented regulations which closely parallel the Federal regulations. Some, however, may differ in important ways, and the evaluator should obtain copies of the state or local requirements for the Oil and Hazardous Substances Pollution Contingency (OHSPC) plan and the Spill Prevention, Control, and Countermeasures (SPCC) plan, where appropriate, and review them for those differences before conducting the evaluations. In particular, the evaluator should check for differences in the definitions of reportable quantities and the specific procedures for reporting spills that may exist in state/local regulations.

### D. FWS/DOI Manuals

. No applicable manuals final as of the publication of this handbook.

### E. Key Compliance Requirements

- SPCC Plans - Facilities that store, transport, or dispense petroleum products are required to prepare an SPCC plan, unless certain criteria are met. The SPCC plan is required to contain general information about the facility, name and title of the designated coordinator, and an inventory of all storage, handling, and transfer facilities. Each SPCC plan must be reviewed at least once every 3 yr, unless it is an exempted facility. The SPCC plan must be reviewed and/or amended when there is a material change in facility design, construction, operation, or maintenance that alters potential for an oil spill. Each SPCC plan and

any amendments must be certified by a registered professional engineer and the plan and each amendment must be prepared according to sound engineering practices. A copy of the SPCC plan is required to be available at sites that are normally attended at least 8 h/day where there is a potential for a discharge. All facility personnel involved with the management and handling of oil must receive training (40 CFR 112.3, 112.5, and 112.7(e)(10)).

- Response Plans - Nontransportation related onshore facilities that, because of location, could reasonably be expected to cause substantial harm to the environment by discharging oil into or on the navigable waters or adjoining shoreline are required to develop response plans. A facility could, because of its location, reasonably be expected to cause substantial harm if it meets any of the following criteria:
  - the facility transfers oil over water to or from vessels and has a total oil storage capacity greater than or equal to 42,000 gal
  - the facility's total oil storage capacity is greater than or equal to 1 million gal and one of the following is true:
    - the facility does not have secondary containment for each aboveground area sufficiently large to contain the capacity of the largest AST within each storage area plus sufficient freeboard to allow for precipitation
    - the facility is located at a distance such that discharge from the facility could cause injury to fish and wildlife and sensitive environment
    - the facility is located at a distance such that a discharge from the facility would shut down a public drinking water intake
    - the facility has had a reportable oil spill in an amount greater than or equal to 10,000 gal within the last 5 yr.
- Discharges/Spills - A discharge of oil into navigable waters of the United States, or adjoining shorelines, or into areas that may affect natural resources belonging to or under the exclusive management authority of the United States must be reported to the National Response Center (NRC). Facilities are not allowed to add dispersants or emulsifiers to oils that are discharged (40 CFR 110.2 through 110.10).
- Discharge Prevention/Cleanup - Facilities are required to have appropriate containment and/or diversionary structures and cleanup equipment readily available to prevent discharged petroleum products from reaching navigable water courses (40 CFR 112.7(c)).
- Aboveground Storage Tanks (ASTs) - All bulk storage tanks are required to be provided with a secondary means of containment for the entire contents of the largest single tank, plus sufficient freeboard to allow for precipitation. ASTs are required to undergo periodic integrity testing with a written log kept of this testing. Drainage of rainwater from diked areas must be controlled by a valve that is closed when not in active use. Drainage water that is determined to contain petroleum products in harmful quantities must be treated before discharge to meet applicable water quality standards (40 CFR 112.7(e)(1) through 112.7(e)(2)).
- Piping Systems - Buried piping at facility transfer operations, pumping activities, and in-plant processing is required to have a protective wrapping and coating to be cathodically protected if soil conditions warrant (40 CFR 112.7(e)(3)(i) and 112.7(e)(3)(iv)).
- Onshore Oil Pipelines - Facilities with onshore oil pipelines that, because of location, could reasonably be expected to cause substantial harm to the environment by discharging oil

into navigable waters are required to prepare a response plan. Copies of the response plan are required to be submitted to the U.S. Environmental Protection Agency (USEPA) Research and Special Programs Administration (RSPA) for approval. Copies of the response plan are required to be kept at the operators headquarters, pump stations, and other places where response activities might be conducted. Training is required for the implementation of the response plan. The Response Plan is required to be reviewed every 3 yr from the date of submission and modified to address new or different operating conditions or information (49 CFR 194).

- **Service Stations** - The storage of liquids at service stations, specifically Class I liquids, has to be done in containers that are secure and prevents the excess release of vapors (29 CFR 1910.106(g)).
- **Used Oil** - Although used oil has not been declared a hazardous waste at the Federal level, it does need to be stored, handled, and documented according to specific requirements depending on whether the facility is a used oil generator, a used oil collection center and aggregation point, a used oil transporter, a used oil burner, or a used oil marketer (40 CFR 279).
- **Recordkeeping** - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

#### **F. Key Compliance Definitions**

- **Container** - any portable device in which materials is stored, transported, treated, disposed of, or otherwise handled (40 CFR 279.1).
- **Contiguous Zone** - the entire zone established or to be established by the United States under article 24 of the Convention on the Territorial Sea and Contiguous Zone (40 CFR 110.1).
- **Continuous Discharge** - a discharge occurring without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or other similar activities (40 CFR 123.3).
- **Daily Discharge** - the discharge of a pollutant measured during a calendar day or any 24 h period that reasonably represents the calendar day for purposes of sampling (40 CFR 122.2).
- **Direct Discharge** - the discharge of a pollutant (40 CFR 122.2).
- **Discharge** - when used in relation to Section 311 of the Act, includes, but is not limited to, any spilling, leaking, pumping, pouring, emitting, emptying, or dumping, but excludes (40 CFR 110.1):
  1. discharges in compliance with a permit
  2. discharges resulting from circumstances identified and reviewed and made a part of the public record with respect to an issued permit and subject to a condition in the permit



3. continuous or anticipated intermittent discharges from a point source, identified in a permit application that are caused by events occurring within the scope of relevant operating or treatment systems.
- *Do-It-Yourself (DIY) Used Oil Collection Center* - any site or facility that accepts aggregates and stores used oil collected only from household DIYs (40 CFR 279.1).
  - *Environmentally Sensitive Area* - an area of environmental importance which is in or adjacent to navigable waters (49 CFR 194.5).
  - *Existing Tank* - a tank that is used for the storage or processing of used oil and that is in operation, or a tank for which installation has commenced on, or prior to, the effective date of the authorized used oil program for the state in which the tank is located (40 CFR 279.1).
  - *Fish and Wildlife and Sensitive Environments* - this means areas that may be identified by either their legal designation or by evaluations of Area Committees (for planning) or members of the Federal On-Scene Coordinator's spill response structure (during responses) (40 CFR 112.2).
  - *Household "Do-It-Yourself" Used Oil* - oil that is derived from households, such as used oil generated by individuals who generate used oil through the maintenance of their personal vehicles (40 CFR 279.1).
  - *Management Practice (MP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
  - *Navigable Waters* - the waters of the United States, including the territorial seas. Navigable waters do not include prior converted cropland. The terms include (40 CFR 100.2):
    1. all waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide
    2. interstate waters, including interstate wetlands
    3. all other waters such as intra-state lakes, rivers, streams (including intermittent streams), mudflats, sandflats, and wetlands, the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
      - a. that are or could be used by interstate or foreign travelers for recreational or other purposes
      - b. from which fish or shellfish are or could be taken and sold in interstate or foreign commerce
      - c. that are used or could be used for industrial purposes by industries in interstate commerce
    4. all impoundments of waters otherwise defined as navigable waters under this section
    5. tributaries of waters identified above, including adjacent wetlands
    6. wetlands adjacent to waters identified above.

- *New Tank* - a tank that will be used to store or process used oil and for which installation has started after the effective date of the authorized used oil program for the state in which the tank is located (40 CFR 279.1).
- *Offshore Facility* - any facility of any kind located in, on, or under any of the navigable waters of the United States, and any facility or any kind that is subject to the jurisdiction of the United States and is located in, on, or under any other waters, other than a vessel or a public vessel (40 CFR 110.2 and 33 CFR 153.103).
- *Off-Specification Oil* - used oil burned for energy recovery and any fuel produced from used oil that exceeds the following allowable limits (40 CFR 279):

Arsenic	5 ppm maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Flash Point	100 °F minimum
Total halogens	4000 ppm maximum

- *Oil* - when used in relation to Section 311 of the Act, means oil of any kind or in any form, including, but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil (40 CFR 110.2 and 33 CFR 153.103).
- *Onshore Facility* - any facility (including but not limited to, motor vehicles and rolling stock) of any kind located in, on, or under any land within the United States, other than submerged land (40 CFR 110.2 and 33 CFR 153.103).
- *Onshore Oil Pipeline Facilities* - new and existing pipe, rights of way and any equipment, facility, or building used in the transportation of oil located in, on, or under, any land within the United States other than submerged land (49 CFR 194.5).
- *Operator* - in relationship to onshore oil pipeline facilities, a person who owns or operates onshore oil pipeline facilities (49 CFR 194.5).
- *Pipeline* - all parts of an onshore pipeline facility through which oil moves, including, but not limited to, line pipe, valves, and other appurtenances connected to the line pipe, pumping units, fabricated assemblies associated with pumping units, metering and delivery stations and fabricated assemblies therein, and breakout tanks (49 CFR 194.5).
- *Point Source* - any discernible confined and discrete conveyance including but not limited to a pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater (40 CFR 122.2 and 401.11(d)).

- *Processing* - means chemical or physical operations designed to produce from used oil, or to make used oil more amenable for production, fuel oils, lubricants, or other used oil-derived product. Processing includes, but is not limited to blending used oil with Virgin petroleum products, blending used oils to meet the fuel specification, filtration, simple distillation, chemical or physical separation and re-refining (40 CFR 279.1).
- *Public Vessel* - a vessel owned or bare boat chartered and operated by the United States, or by a state or political subdivision thereof, or by a foreign nation, except when such vessel is engaged in commerce (40 CFR 110.2 and 33 CFR 153.103).
- *Qualified Individual* - an English-speaking representative of an operator, located in the United States, available on a 24-h basis, with full authority to: activate and contract with required oil spill removal organizations; activate personnel and equipment maintained by the operator; act as liaison with the On-Scene Coordinator (OSC); and obligate any funds required to carry out all required or directed oil response activities (49 CFR 194.5).
- *Re-Refining Distillation Bottoms* - the heavy fractions produced by vacuum distillation of filtered and dehydrated used oil. The composition of still bottoms varies with column operation and feedback (40 CFR 279.1)
- *Response Activities* - the containment and removal of oil from the water and shorelines, the temporary storage and disposal of recovered oil, or the taking of other actions as necessary to minimize or mitigate damage to the environment (49 CFR 194.5).
- *Response Area* - the inland zone or coastal zone, as defined in the National Contingency Plan (NCP), in which response activity is occurring (49 CFR 194.5).
- *Response Plan* - the operator's core plan and the response zone appendices for responding, to the maximum extent practicable, to a worst case discharge of oil, or the substantial threat of such a discharge (49 CFR 194.5).
- *Response Zone* - a geographic area, either along a length of pipeline or including multiple pipelines, containing one or more adjacent line sections, for which the operator must plan for the deployment of, and provide, spill response capabilities (49 CFR 194.5).
- *Sheen* - an iridescent appearance on the surface of the water (40 CFR 110.2).
- *Sludge* - an aggregate of oil or oil and other matter of any kind in any form other than dredged spoil, having a combined specific gravity equivalent to or greater than water (40 CFR 110.2).
- *Spill Event* - a discharge of oil into or upon the navigable waters of the United States or adjoining shorelines in harmful quantities (40 CFR 112.3).
- *Spill Prevention, Control, and Countermeasure (SPCC) Plan* - the SPCC plan shall be a carefully thought-out plan prepared in accordance with good engineering practices, and which has the full approval of management at a level with authority to commit the necessary resources (40 CFR 112.3).

- *Tank* - any stationary device, designed to contain an accumulation of used oil, which is constructed primarily of nonearthen materials which provides structural support (40 CFR 279.1).
- *Used Oil* - any oil that has been refined from crude oil or any synthetic oil that has been used and as a result of such use is contaminated by physical or chemical impurities (40 CFR 279.1).
- *Used Oil Aggregation Point* - any site or facility that accepts, aggregates, and/or stores used oil collected only from other used oil generation sites owned or operated by the owner or operator of the aggregation point, from which used oil is transported to the aggregation point in shipments of no more than 55 gal [208.20 L]. Used oil aggregation points may also accept used oil from household DIYs (40 CFR 279.1).
- *Used Oil Burner* - a facility where used oil not meeting the specification requirements is burned for energy recovery (40 CFR 279.1).
- *Used Oil Collection Center* - any site or facility that is registered/licensed/permitted/recognized by a state/county/municipal government to manage used oil and accepts/aggregates and stores used oil collected from used oil generators who bring used oil to the collection centers in shipments of no more than 55 gal [208.20 L]. Used oil collection centers may accept used oil from household DIYs (40 CFR 279.1).
- *Used Oil Fuel Marketer* - any person who conducts either of the following activities (40 CFR 279.1):
  1. directs a shipment of off-specification used oil from their facility to a used oil burner
  2. first claims that used oil that is to be burned for energy recovery meet used oil fuel specifications.
- *Used Oil Generator* - any person, by site, whose act or process produces used oil or whose act first causes used oil to become subject to regulation (40 CFR 279.1).
- *Used Oil Processor/Re-refiner* - a facility that processes used oil (40 CFR 279.1).
- *Used Oil Transfer Facility* - any transportation related facility, including loading docks, parking areas, storage areas, and other areas where shipments of used oil are held for more than 24 h during the normal course of transportation and not longer than 35 days (40 CFR 279.2).
- *Used Oil Transporter* - any person who transports used oil, any persons who collects used oil from more than one generator and transports the collected oil, and owners and operators of used oil transfer facilities. Used oil transporters may consolidate or aggregate loads of used oil for purposes of transportation, but, with the following exception, may not process used oil. Transporters may conduct incidental processing operations that occur in the normal course of used oil transportation (e.g., settling and water separation), but that are not designed to produce or make more amenable for production of used oil derived products or used oil fuel (40 CFR 279.1).

- *Vessel* - every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water other than a public vessel (40 CFR 110.2).
- *Wetlands* - those areas that are inundated or saturated by surface or groundwater at a frequency or duration sufficient to support and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include playa lakes, swamps, marshes, bogs, and similar areas such as sloughs, prairie potholes, wet meadows, prairie river overflows, mudflats, and natural ponds (40 CFR 110.2).
- *Worst Case Discharge* - the largest foreseeable discharge of oil, including a discharge from fire or explosion, in adverse weather conditions (49 CFR 194.5).



## PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT

### GUIDANCE FOR CHECKLIST USERS

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	REFER TO CHECKLIST ITEMS:	REFER TO PAGE NUMBER:
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Discharges/Spills	6-13 and 6-14	6-23
Storage/Containment		
General	6-15 through 6-19	6-25
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Marketing	6-61 through 6-65	6-55
Dust Suppression	6-66	6-57

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## **PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**

### **Records To Review**

- Records of all spills, leaks, and associated site assessment/cleanup activities (for 3 yr)
- Official correspondence with state implementing agency
- Spill Prevention and Response Plan
- Facility response plan required by OPA
- Records of spill response training programs
- Records of all spills, leaks, and associated site assessment/cleanup activities (for 3 yr)

### **Physical Features To Inspect**

- Refueling facilities, including:
  - Above and belowground storage tanks and dikes
  - Venting
  - Fill pipe
  - Gauges
- Washrack areas
- Vehicle maintenance areas
- Oil separators
- Oil and hazardous substance site
- Fire training pits
- Grease racks



**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>ALL FACILITIES</b></p> <p><b>6-1.</b> The current status of any ongoing or unresolved consent orders, compliance agreements, notices of violation (NOVs), interagency agreements, or equivalent state enforcement actions is required to be examined (a finding under this checklist item will have the enforcement action/identifying information as the citation).</p> <p><b>6-2.</b> FWS facilities are required to comply with state and local regulations (EO 12088, Section 1-1).</p> <p><b>6-3.</b> Facilities will meet regulatory requirements issued since the finalization of the handbook (a finding under this checklist item will have the citation of the new regulation as a basis of finding).</p>	<p>Determine if noncompliance issues have been resolved by reviewing a copy of the previous report, consent orders, compliance agreements, NOVs, interagency agreements, or equivalent state enforcement actions.</p> <p>Verify that the facility is complying with state and local requirements.</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies.</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- spill management</li> <li>- handling of wastewater and fuel sludge from tank cleaning</li> <li>- use of product recovery systems</li> <li>- containment</li> <li>- used oil</li> <li>- ASTs.)</li> </ul> <p>Determine if any new regulations concerning POLs have been issued since the finalization of the handbook.</p> <p>Verify that the facility is in compliance with newly issued regulations.</p>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**6-4.** FWS facilities should report all notices of violation (NOVs) to the Region and the Service Pollution Control Office (SPCO) (MP).

**REVIEWER CHECKS:**  
**July 1995**

Determine if the facility has received an NOV relating to petroleum management.

Verify that the NOV was reported to the Region and the SPCO.

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>SPILL PLANS</b></p> <p>6-5. Facilities that store, transport, or dispense petroleum products are required to prepare an SPCC plan (40 CFR 112.1(d) and 112.3).</p> <p>6-6. The SPCC plan is required to contain specific information (40 CFR 112.1(d) and 112.7).</p>	<p>Verify that the facility has an SPCC plan.</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [158,987 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4997 L] of oil or less and no single container exceeds a capacity of 660 gal [2498 L].)</li> </ul> </li> </ul> <p>(NOTE: This applies to onshore and offshore facilities, including onshore and offshore mobile or portable facilities, such as onshore drilling or workover rigs, barge mounted offshore drilling or workover rigs, and portable fueling facilities.)</p> <p>Determine if the SPCC plan has been prepared and reviewed for the following:</p> <ul style="list-style-type: none"> <li>- Regional approval</li> <li>- spill reporting procedures</li> <li>- prespill planning for major potential spill areas</li> <li>- spill containment and cleanup equipment/facilities</li> <li>- oil spill contingency plan</li> <li>- training procedures</li> <li>- spill response exercises</li> <li>- plan review and update procedures</li> <li>- security measures</li> <li>- inspection procedures</li> <li>- tank integrity testing procedures.</li> </ul> <p>(NOTE: The regulations does allow for some variance of the contents of the plan. But if a suggested topic is not included in the plan, the reason for exclusion must be documented.)</p>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
6-6. (continued)	<p>Verify that the SPCC plan contains:</p> <ul style="list-style-type: none"> <li>- general information about the facility including: <ul style="list-style-type: none"> <li>- name</li> <li>- type of function</li> <li>- location of facility drainage patterns</li> <li>- location maps</li> </ul> </li> <li>- name and title of designated coordinator</li> <li>- inventory of all storage, handling, and transfer facilities that could produce a significant spill. For each listing include: <ul style="list-style-type: none"> <li>- prediction of direction and rate of flow</li> <li>- total quantity of oil that could be spilled as a result of major failure.</li> </ul> </li> </ul> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112.1 if:</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [158,987 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4998 L] of oil or less and no single container exceeds a capacity of 660 gal [2498 L].)</li> </ul> </li> </ul>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>6-7.</b> Each SPCC plan must be reviewed at least once every 3 yr (40 CFR 112.1(d) and 112.5(b)).</p>	<p>Verify that the SPCC plan has been reviewed at least once every 3 yr.</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [158,987 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498 L].)</li> </ul> </li> </ul>
<p><b>6-8.</b> The SPCC plan must be reviewed and/or amended under specific circumstances (40 CFR 112.1(d), 112.4 and 112.5 (a)).</p>	<p>Verify that the plan was amended within 6 mo if there was a material change in facility design, construction, operations, or maintenance that alters the potential for an oil spill.</p> <p>Verify that the plan was sent to the Regional Administrator within 60 days for review if the facility:</p> <ul style="list-style-type: none"> <li>- discharged oil of more than 1000 gal [3785 L] into or upon navigable waters in a single spill even</li> <li>- discharged oil in harmful quantities into or upon navigable waters in two reportable spill events within any 12 mo period.</li> </ul> <p>Verify that amendments specified by the Regional Administrator become part of the plan within 30 days, or by the Regional Administrator specified deadline, and are implemented within 6 mo.</p>





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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<p><b>6-11.</b> A copy of the SPCC plan is required to be available at sites that are normally attended at least 8 h/day where there is a potential for a discharge (40 CFR 112.1(d) and 112.3 (e)).</p>	<p>Verify that a copy of the SPCC is available at facilities that have personnel onsite at least 8 h/day.</p> <p>(NOTE: If personnel is not onsite for 8 h/day, the plan may be kept at the nearest field office and the plan should be made available to the Regional Administrator.)</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [158,987 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4997 L] of oil or less and no single container exceeds a capacity of 660 gal [2498 L].)</li> </ul> </li> </ul>
<p><b>6-12.</b> All facility personnel involved with the management and handling of oil and hazardous substances must take part in periodic training in spill prevention and response (40 CFR 112.1(d) and 112.7(e)(10)).</p>	<p>Verify that proper training has been conducted by reviewing training records and interviewing the staff.</p> <p>Verify that training addresses the procedures to follow when a spill occurs, such as:</p> <ul style="list-style-type: none"> <li>- notification</li> <li>- containment</li> <li>- safety practices.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
6-12. (continued)	<p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [158,987 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4997 L] of oil or less and no single container exceeds a capacity of 660 gal [2498 L].)</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>DISCHARGES/SPILLS</b></p> <p><b>6-13.</b> Discharges of oil into or upon the navigable waters of the United States or adjoining shorelines or into or upon the waters of the contiguous zone or into areas that may affect natural resources belonging to, or under the exclusive management authority of the United States must be reported (40 CFR 110.2 through 110.10).</p> <p><b>6-14.</b> Facilities are not allowed to add dispersants or emulsifiers to oils that are discharged (40 CFR 110.8).</p>	<p>Determine if the facility has had any discharges of oils.</p> <p>(NOTE: Discharges of oil are defined as those which violate applicable water quality standards or cause a film or a sheen upon or discoloration of the surface of the water or adjoining shoreline or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shores.)</p> <p>Verify that the NRC was notified as soon as possible after discovery of a discharge as defined in the above NOTE.</p> <p>(NOTE: If direct reporting to the NRC is not practicable reports may be made to the Coast Guard or USEPA predesignated OSC.)</p> <p>(NOTE: Discharges of oil from a properly functioning vessel engines are not considered harmful but discharges of oil from a vessel's bilge are not allowed.)</p> <p>Verify that facilities do not add dispersants or emulsifiers to discharges.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>STORAGE/ CONTAINMENT</b></p> <p><b>6-15.</b> Appropriate containment and/or diversionary structures, and cleanup equipment to prevent discharged petroleum products from reaching navigable water course is required to be readily available at facility (40 CFR 112.1(d), 112.7(c) and 112.7 (d)).</p>	<p>(NOTE: Water is of special concern during fueling of boats on the water and repair, maintenance, and replacement of powerhouse and water control structures.)</p> <p>Determine that, at onshore facilities, one of the following prevention systems or an equivalent is used:</p> <ul style="list-style-type: none"> <li>- absorbent material</li> <li>- dikes, berms, or retaining walls sufficiently impervious to contain spilled oil</li> <li>- curbing devices</li> <li>- culverting gutters or other drainage systems</li> <li>- weirs, booms, or other barriers</li> <li>- spill diversion ponds</li> <li>- retention ponds.</li> </ul> <p>(NOTE: When it is determined that the installation of the types of equipment or structures listed above at onshore or offshore facilities to prevent discharged oil from reaching the navigable waters is not practicable, this impracticability should be clearly demonstrated and the following provided:</p> <ul style="list-style-type: none"> <li>- a strong oil spill contingency plan</li> <li>- a written commitment of manpower, equipment, and materials required to expeditiously control and remove any harmful quantity of oil discharged.)</li> </ul> <p>Verify that, at offshore facilities (see definitions), one of the following, or an equivalent is available:</p> <ul style="list-style-type: none"> <li>- curbing</li> <li>- drip pans</li> <li>- sumps</li> <li>- collection systems.</li> </ul> <p>Determine the following for spill equipment in each oil storage area:</p> <ul style="list-style-type: none"> <li>- adequacy of material types and quantity</li> <li>- accessibility of storage locations</li> <li>- condition of equipment.</li> </ul>

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**6-15. (continued)**

(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:

- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows:
  - onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines
  - equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT
- the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria:
  - the underground buried storage capacity of the facility is 42,000 gal [158,987 L] or less of oil
  - the storage capacity which is not buried at the facility is 1320 gal [4997 L] of oil or less and no single container exceeds a capacity of 660 gal [2498 L].)

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>6-16.</b> All bulk storage tanks (over 660 gal [2498.37 L]) are required to be provided with a secondary means of containment for the entire contents of the largest single tank plus sufficient free-board to allow for precipitation (40 CFR 112.1(d), 112.7(e)(2)(ii)).</p>	<p>Verify that adequate containment is provided for bulk storage tanks in the storage area and at remote tanks.</p> <p>Verify that diked areas are impervious enough to contain spilled oil.</p> <p>(NOTE: Dikes, containment curbs, and pits are commonly employed for this purpose, but they may not always be appropriate. An alternative system could consist of a complete drainage trench enclosure arranged so that a spill could terminate and be safely contained in an in-plant catchbasin or holding pond.)</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [158,987 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4997 L] of oil or less and no single container exceeds a capacity of 660 gal [2498 L].)</li> </ul> </li> </ul>
<p><b>6-17.</b> Drainage of rain-water from diked areas must be controlled by a valve which is closed when not in active use/attended (40 CFR 112.1(d), 112.7(e)(1) and 112.7(e)(2)(iii)).</p>	<p>Verify that valves are closed when not in use by inspecting drainage valves at diked areas.</p> <p>Verify that drainage valves are attended when opened to drain diked/bermed area by interviewing personnel.</p> <p>Determine if operating personnel understand the meaning of a harmful discharge as described in 40 CFR 110.6.</p> <p>Verify that records are kept of when the dike is drained.</p> <p>Inspect records for any drainage water which was inspected to determine if it would represent a harmful discharge.</p>

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<p><b>6-17. (continued)</b></p>	<p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [158,987 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4997 L] of oil or less and no single container exceeds a capacity of 660 gal [2498 L].)</li> </ul> </li> </ul>
<p><b>6-18.</b> Drainage water which is determined to contain petroleum products in harmful quantities must be treated prior to discharge to meet applicable water quality standards (40 CFR 112.1(d) and 112.7(e)(2)).</p>	<p>Determine if discharges containing harmful quantities of petroleum products were properly treated, recovered, or disposed and reported by interviewing onsite personnel.</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [158,987 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4997 L] of oil or less and no single container exceeds a capacity of 660 gal [2498 L].)</li> </ul> </li> </ul>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<p><b>6-19.</b> ASTs are required to undergo periodic integrity testing (40 CFR 112.1(d) and 112.7(e)(2)(vi)).</p>	<p>Verify that periodic leak tests have been conducted (a decrease in converted fuel volume equal to or greater than 1/4 in. [0.64 cm] constitutes a suspected leak) and check the results of these tests.</p> <p>Determine if leaking tanks have been repaired or replaced.</p> <p>(NOTE: Periodic testing should take tank design into account and involve such techniques as hydrostatic testing, visual inspection, or a system of non-destructive shell thickness testing.)</p> <p>(NOTE: This does not allow for all possible testing options.)</p> <p>Verify that a written log of integrity testing has been maintained.</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [158,987 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4997 L] of oil or less and no single container exceeds a capacity of 660 gal [2498 L].)</li> </ul> </li> </ul>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>PIPELINES</b></p> <p><b>6-20.</b> Buried piping at a transfer facility, pumping station, or in-plant processing facility is required to have a protective wrapping and coating and is required to be cathodically protected if soil conditions warrant (40 CFR 112.1(d) and 112.7(e)(3)(i)).</p>	<p>Verify that buried fuel piping is properly protected from corrosion by examining records and interviewing personnel.</p> <p>Verify that methods are appropriate and correctly applied if cathodic protection is used.</p> <p>Verify that detected leaks and failures are being reported.</p> <p>(NOTE: Cathodic protection systems must be routinely monitored.)</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [158,987 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4997 L] of oil or less and no single container exceeds a capacity of 660 gal [2498 L].)</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>6-21.</b> All above and belowground fuel piping systems at transfer facilities, pumping stations, and in-plant processing facilities must be regularly examined and any suspected leaks investigated immediately (40 CFR 112.1(d) and 112.7(e)(3)(iv)).</p>	<p>Verify that regular inspections have been conducted by examining records and interviewing personnel.</p> <p>Verify that aboveground general condition of items, such as flange joints, valve glands and bodies, catch pans, pipeline supports, locking of valves, and metal surfaces have been assessed.</p> <p>Verify that confirmed leaks have been reported and leaking pipes repaired or replaced.</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [158,987 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4997 L] of oil or less and no single container exceeds a capacity of 660 gal [2498 L].)</li> </ul> </li> </ul>
<p><b>6-22.</b> Offsite pipelines should be inspected regularly (MP).</p>	<p>Determine if inspections are performed by examining records.</p> <p>Verify that detected leaks and failures have been reported and leaking pipes repaired or replaced by interviewing personnel.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>6-23.</b> In specific instances of failure in a pipeline for hazardous liquids, a report must be submitted (49 CFR 195.1, 195.50, and 195.54).</p>	<p>Verify that, when there is a release of hazardous liquid or CO<sub>2</sub> that results in the following, an accident report is submitted to Department of Transportation (DOT) within 30 days:</p> <ul style="list-style-type: none"> <li>- explosion or fire not intentionally set by the operator</li> <li>- loss of 50 or more barrels (bbl) [7949.37 L] of hazardous liquid or CO<sub>2</sub></li> <li>- escape to the atmosphere of more than 5 bbl [7944.94 L] a day of highly volatile liquids</li> <li>- death of any person</li> <li>- bodily harm resulting in: <ul style="list-style-type: none"> <li>- loss of consciousness</li> <li>- necessity to carry the person from the scene</li> <li>- necessity for medical treatment</li> <li>- disability which prevents the discharge of normal duties or pursuit of normal activities</li> </ul> </li> <li>- estimated property damage to the property of the operator or others or both, exceeding \$5000.</li> </ul> <p>(NOTE: This requirement does not apply to the transportation of:</p> <ul style="list-style-type: none"> <li>- a hazardous liquid that is transported in a gaseous state</li> <li>- a hazardous liquid through a pipeline by gravity</li> <li>- a hazardous liquid through pipelines that operate at a stress level of 20 percent or less of the specified minimum yield strength of the line pipe</li> <li>- petroleum in onshore gathering lines in rural areas except gathering lines in the inlets of the Gulf of Mexico</li> <li>- a hazardous liquid or CO<sub>2</sub> in offshore pipelines which are located upstream from the outlet flange of each facility on the Outer Continental Shelf where hydrocarbons or CO<sub>2</sub> are produced or where produced hydrocarbons or CO<sub>2</sub> are first separated, dehydrated, or otherwise processed, whichever facility is further downstream</li> <li>- a hazardous liquid or CO<sub>2</sub> through onshore production, refining, or manufacturing facilities, storage or in plant piping systems associated with such facilities</li> <li>- a hazardous liquid or carbon dioxide by vessel, aircraft, tank truck, tank car, or other vehicle or terminal facilities used exclusively to transport hazardous liquids or CO<sub>2</sub> between such modes of transportation</li> <li>- CO<sub>2</sub> downstream from a point in the vicinity of the well site at which CO<sub>2</sub> is delivered to a production facility.)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>6-24.</b> Under specific circumstances, if there is a release of a hazardous liquid or CO<sub>2</sub> transported in a pipeline, telephone notification must be made as soon as possible after discovery of the release (49 CFR 195.1 and 195.52).</p>	<p>Verify that telephone notification is made as soon as possible of any failure that:</p> <ul style="list-style-type: none"> <li>- caused a death or a personal injury requiring hospitalization</li> <li>- resulted in either a fire or explosion not intentionally set by the operator</li> <li>- caused estimated damage to the property of the operator or other or both, exceeding \$5000</li> <li>- resulted in pollution of any stream, river, lake, reservoir, or other similar body of water that violated applicable water quality standards, caused a discoloration of the surface of the water or adjoining shoreline, or deposited a sludge or emulsion beneath the surface of the water or upon adjoining shoreline</li> <li>- is significant in the judgement of the operator even though it did not meet any of the above criteria.</li> </ul> <p>(NOTE: Telephone reports are to be made to 1-800-424-8802.)</p> <p>(NOTE: This requirement does not apply to: the transportation of:</p> <ul style="list-style-type: none"> <li>- a hazardous liquid that is transported in a gaseous state</li> <li>- a hazardous liquid through a pipeline by gravity</li> <li>- a hazardous liquid through pipelines that operate at a stress level of 20 percent or less of the specified minimum yield strength of the line pipe</li> <li>- petroleum in onshore gathering lines in rural areas except gathering lines in the inlets of the Gulf of Mexico</li> <li>- a hazardous liquid or CO<sub>2</sub> in offshore pipelines which are located upstream from the outlet flange of each facility on the Outer Continental Shelf where hydrocarbons or CO<sub>2</sub> are produced or where produced hydrocarbons or CO<sub>2</sub> are first separated, dehydrated, or otherwise processed, whichever facility is further downstream</li> <li>- a hazardous liquid or CO<sub>2</sub> through onshore production, refining, or manufacturing facilities, storage or in plant piping systems associated with such facilities</li> <li>- a hazardous liquid or CO<sub>2</sub> by vessel, aircraft, tank truck, tank car or other vehicle or terminal facilities used exclusively to transport hazardous liquids or CO<sub>2</sub> between such modes of transportation</li> <li>- CO<sub>2</sub> downstream from a point in the vicinity of the well site at which CO<sub>2</sub> is delivered to a production facility.)</li> </ul>

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<p><b>6-25.</b> Facilities with onshore oil pipelines that, because of location, could reasonably be expected to cause substantial harm or significant and substantial harm to the environment by discharging oil into or on any navigable waters of the United States, or adjoining shorelines, are required to prepare a response plan (49 CFR 194.3 and 194.101 through 194.107).</p>	<p>Verify that the response plan includes:</p> <ul style="list-style-type: none"> <li>- a statement indicating which sections in a response zone can be expected to cause significant and substantial harm to the environment if there is a discharge of oil into or on the navigable water or adjoining shorelines</li> <li>- indications of the worst case discharge</li> <li>- immediate notification procedures</li> <li>- spill detection and mitigation procedures</li> <li>- the name address and phone number of an oil spill response organization</li> <li>- response activities and response resources</li> <li>- training procedures</li> <li>- equipment testing</li> <li>- schedules for drills</li> <li>- plan updating procedures</li> <li>- an appendix for each response zone indicating all the above general information in a way that is tailored to that response zone.</li> </ul> <p>Verify that the response plan is in English and if necessary, any other language understood by personnel responsible for carrying out the plan.</p> <p>(NOTE: Significant and substantial harm can be expected if the line is greater than 6 5/8 in. [16.83 cm] in outside nominal diameter, greater than 10 mi [16.09 km] in length and the line section:</p> <ul style="list-style-type: none"> <li>- has experienced a release greater than 1000 bbl [158,987.3 L] in the previous 5 yr</li> <li>- has experienced two or more reportable releases in the previous 5 yr</li> <li>- contains any electric resistance welded pipe, manufactured prior to 1970, operated at maximum operating pressure that corresponds to a stress level greater than 50 percent of the specified minimum yield strength of the pipe</li> <li>- is located within a 5 mi [8.05 km] radius of potentially affected public drinking water intakes and could reasonably be expected to reach the intake</li> <li>- is located within .1 mi [1.61 km] radius of potentially affected environmentally sensitive areas, and could reasonably be expected to reach these areas.)</li> </ul> <p>(NOTE: The requirement to submit a response plan is effective 18 February 1993. After 18 August 1993, the onshore pipeline must be operated according to the details outlined in the response plan.)</p>

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<p><b>6-25. (continued)</b></p>	<p>(NOTE: A response plan is not required for the following facilities:</p> <ul style="list-style-type: none"> <li>- a pipeline that is 6 5/8 in. [16.83 cm] or less in outside nominal diameter and is 10 mi [16.09 km] or less in length, and all the following conditions apply: <ul style="list-style-type: none"> <li>- the pipeline has not experienced a release greater than 1000 bbl [158,987.3 L] within the previous 5 yr</li> <li>- the pipeline has not experienced at least two reportable releases within the previous 5 yr</li> <li>- the pipeline contains any electric resistance welded pipe, manufactured prior to 1970, does not operate at a maximum operating pressure that corresponds to a stress level greater than 50 percent of the specified minimum yield strength of the pipe</li> <li>- the pipeline is not in proximity to navigable waters, public drinking water intakes, or environmentally sensitive areas</li> </ul> </li> <li>- a line section that is greater than 6 5/8 in. [16.83 cm] in outside nominal diameter and is greater than 10 mi [16.09 km] in length, where the operator determines that it is unlikely that the worst case discharges from any point on the line section would adversely affect, within 12 h after the start of discharge, any navigable waters, public drinking water intakes, or environmentally sensitive areas</li> <li>- a line section that is 6 5/8 in. [16.83 cm] or less in outside nominal diameter and is 10 mi [16.09 km] or less in length, where the operator determines that it is unlikely that the worst case discharge from any point on the line section would adversely affect, within 4 h after the initiation of the discharge, any navigable waters, public drinking water intakes, or environmentally sensitive areas.)</li> </ul>
<p><b>6-26.</b> Copies of the response plan are required to be submitted to the USEPA RSPA (49 CFR 194.119(a) through 194.119(d)).</p>	<p>Verify that two copies were submitted to the following address:</p> <p style="padding-left: 40px;">Pipelines Response Plans Office  Research and Special Programs Administration  Department of Transportation  400 Seventh St. SW  Washington D.C. 20590-0001.</p> <p>Verify that the RSPA approved the response plan.</p>



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<p><b>6-27.</b> If RSPA does not approve a response plan for a pipeline identified as expected to cause significant and substantial harm to the environment, the operator must submit certification to the RSPA by 18 July 1993 that the operator has obtained, through contract or other means, the necessary personnel and equipment to respond to a worst case discharge or a substantial threat of a discharge (49 CFR 194.119(e)).</p>	<p>Determine if the facility has an approved response plan.</p> <p>Verify that, if there is not an approved response plan, the necessary certification has been submitted.</p>
<p><b>6-28.</b> Copies of the response plan are required to be kept at specific locations (49 CFR 194.111).</p>	<p>Verify that a copy of the complete response plan is at the operator's headquarters and a copy is provided to each responsible individual.</p> <p>Verify that a copy of the core portion of the plan and relevant response zone appendices for each line section whose pressure may be affected by the operation of a particular pump station is provided at the pump station.</p> <p>Verify that a copy of the core portion of the plan and relevant response zone appendices is kept at locations where response activities might be conducted.</p>
<p><b>6-29.</b> Training is required for the implementation of the response plan (49 CFR 194.117).</p>	<p>Verify that training is conducted such that all personnel know:</p> <ul style="list-style-type: none"> <li>- their responsibilities under the plan</li> <li>- the names, addresses, and procedures for contacting the operator on a 24-h basis and an qualified individual.</li> </ul> <p>Verify that reporting personnel know:</p> <ul style="list-style-type: none"> <li>- the content of the information summary</li> <li>- the toll free number of the NRC</li> <li>- the notification process.</li> </ul>

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**6-29. (continued)**

Verify that personnel engaged in response activities know:

- the characteristics and hazards of oil discharged
- the conditions that are likely to worsen emergencies and appropriate corrective actions
- the steps needed to control any accidental discharge of oil and to minimize the potential for fire, explosion, toxicity, or environmental damage
- the proper firefighting procedures and use of equipment, fire suits, and breathing apparatus.

Verify that training records exist for each individual that has been trained, specifically records for:

- operator personnel are at the operators headquarters
- personnel engaged in response are maintained as determined by the operator.

(NOTE: This training does not take the place of emergency response training requirements as found in 29 CFR 1910.120.)

**6-30.** Pipeline response plans are required to be reviewed every 3 yr from the date of submission and modified to address new or different operating conditions or information (49 CFR 194.121).

Verify that the plan is reviewed every 3 yr.

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>POL LOADING AND UNLOADING</b></p> <p><b>6-31.</b> Onshore tank car and tank truck loading/unloading racks are required to meet specific structural standards (40 CFR 112.1(d), 112.7(e) (4)(ii) and 112.7(e) (4)(iii)).</p>	<p>Verify that where rack drainage does not flow into a catchment basin or treatment facility designed to handle spills, a quick drainage system is used.</p> <p>Verify that any containment system is designed to hold at least the maximum capacity of any single compartment of a tank car or tank truck loaded or unloaded at the site</p> <p>Verify that an interlocked warning light or physical barrier system, or warning signs are provided in loading/unloading areas to prevent vehicular departure before complete disconnect of flexible or fixed transfer lines.</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore sites which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore sites which are subject to the authority of the DOT</li> </ul> </li> <li>- the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [158,987 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4997 L] of oil or less and no single container exceeds a capacity of 660 gal [2498 L].)</li> </ul> </li> </ul>

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**6-32.** Specific operational procedures are required to be performed at facility tank car and tank truck loading/unloading sites (40 CFR 112.1(d) and 112.7(e)(iv)).

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Verify that before filling and departure of any tank car or tank truck, the lowermost drain and all outlets of the vehicle are closely examined for leakage and if necessary tightened, adjusted, or replaced to prevent leakage while in transit.

(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:

- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows:
  - onshore and offshore sites which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines
  - equipment or operations of vessels or transportation related onshore and offshore sites which are subject to the authority of the DOT
- the facility, which although otherwise subject to USEPA jurisdiction meets both of the following criteria:
  - the underground buried storage capacity of the facility is 42,000 gal [158,987 L] or less of oil
  - the storage capacity which is not buried at the facility is 1320 gal [4997 L] of oil or less and no single container exceeds a capacity of 660 gal [2498 L].)

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>USED OIL</b></p> <p><b>General</b></p> <p>6-33. Depending on the constituents of the used oil (see Appendix 6-1) facilities are required to handle used oil as a hazardous waste or according to specific used oil requirements (40 CFR 279.10).</p> <p><b>Generators</b></p> <p>6-34. Containers and tanks used to store used oil at used oil generators must be in good condition and not leaking (40 CFR 279.22(b)).</p>	<p>Determine which types of the used oils listed in Appendix 6-1 are generated at the facility.</p> <p>(NOTE: Refer to Appendix 6-2 for a flowchart on the process of determining whether or not used oil is regulated.)</p> <p>Verify that used oil is handled according to its classification as one of the following:</p> <ul style="list-style-type: none"> <li>- a hazardous waste</li> <li>- used oil that falls under the requirements of 40 CFR 279 (see checklist items 6-34 through 6-66)</li> <li>- used oil that is not subject to the requirements of 40 CFR 279 and neither is it a hazardous waste unless testing indicates it does contain hazardous constituents.</li> </ul> <p>(NOTE: The requirements for used oil generators do not apply to the following:</p> <ul style="list-style-type: none"> <li>- household DIY used oil generators</li> <li>- vessels at sea or at port (in these cases generation occurs when it is transported ashore)</li> <li>- mixtures of used oil and diesel fuel mixed by the generators for use in the generators own vehicles</li> <li>- farmers who generate an average of 25 gal/mo [94.64 L/mo] or less of used oil from vehicles or machinery used on the farm in a calendar year.)</li> </ul> <p>(NOTE: In relation to used oil coming ashore from vessels, the owner or operator of the vessel and the person removing or accepting used oil from the vessel are co-generators of the used oil and are both responsible for managing the waste as used oil once it is ashore.)</p> <p>Verify that containers and tanks are not leaking, bulging, rusting, damaged, or dented.</p> <p>Verify that used oil is transferred to a new container or managed in another appropriate manner when necessary.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>6-35.</b> Containers of used oil at used oil generators should be managed in accordance with good management practices (MP).</p> <p><b>6-36.</b> Containers and ASTs used for storage and fill pipes for transferring used oil into USTs are required to be marked or labeled USED OIL (40 CFR 279.22(c)).</p> <p><b>6-37.</b> Used oil generators that detect a release (other than a UST release) after the effective date of the authorized used oil program for the state in which the release is located must meet specific requirements (40 CFR 279.22(d)).</p> <p><b>6-38.</b> Generators are allowed to burn used oil in used oil-fired space heaters if specific parameters are met (40 CFR 279.23).</p>	<p>Inspect containers and storage areas to determine the following:</p> <ul style="list-style-type: none"> <li>- containers are not stored more than two high and have pallets between them</li> <li>- at least 3 ft [~1 m] of aisle space is provided between rows of containers.</li> </ul> <p>Verify that containers and ASTs and fill pipes for USTs are labeled or marked USED OIL.</p> <p>(NOTE: USTs used to store used oil are required to meet the standards outlined in 40 CFR 280.)</p> <p>Verify that, when a release is detected, the following is done:</p> <ul style="list-style-type: none"> <li>- the release is stopped</li> <li>- the released used oil is contained</li> <li>- the released used oil is cleaned up and properly managed</li> <li>- any leaking used oil storage containers or tanks are repaired or replaced prior to returning them to service.</li> </ul> <p>Determine if the facility operates any used oil-fired space heaters.</p> <p>Verify that the following parameters are met:</p> <ul style="list-style-type: none"> <li>- the heater burns only used oil that the facility generates or used oil received from household DIY used oil generators</li> <li>- the heater is designed to have a maximum capacity of not more than 0.5 MBtu/h [0.15 W/h]</li> <li>- the combustion gases from the heater are vented to the ambient air.</li> </ul>

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<p><b>6-39.</b> Except in specific circumstances, used oil generators must ensure that their used oil is transported only by transporters who have a USEPA identification number (40 CFR 279.24).</p>	<p>Determine if the facility is transporting used oil or contracting the transportation of used oil.</p> <p>Verify that the transporter has a USEPA identification number except when:</p> <ul style="list-style-type: none"> <li>- the generator does not transport more than 55 gal [208.20 L] at any time, the vehicle used is owned by the generator or an employee of the generator, and the used oil is going to a used oil collection center that is permitted</li> <li>- the generator is transporting the used oil to an aggregation point owned and/or operated by the same generator in a vehicle owned by the generator or an employee and no more than 55 gal [208.20 L] is transported</li> <li>- the used oil is reclaimed under a contractual agreement and the reclaimed oil is returned to the generator for use as lubricant, cutting oil, or coolant and the contract (or tolling agreement) contains the following: <ul style="list-style-type: none"> <li>- the type of used oil and frequency of shipments</li> <li>- verification that the vehicle used for transportation is owned by the used oil processor/refiner</li> <li>- verification that reclaimed oil will be returned to the generator.</li> </ul> </li> </ul>
<p><b>6-40.</b> Used oil generators should have documentation concerning the disposal of their used oil (MP).</p>	<p>Verify that regardless of whether the facility sends its used oil to an aggregation center, a recycler, a burner, or elsewhere, it has documentation of the amounts sent and the date.</p>
<p><b>6-41.</b> Used oil generators are not allowed to mix hazardous waste with used oil unless specific parameters are met (40 CFR 279.21(a)).</p>	<p>Verify that the facility does not mix hazardous waste with used oil unless:</p> <ul style="list-style-type: none"> <li>- the resulting mixture does not exhibit any characteristics of hazardous waste</li> <li>- the waste is hazardous solely because it exhibits the characteristic of ignitability and is not a listed hazardous waste.</li> </ul>





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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>USED OIL</b></p> <p><b>Collection Centers and Aggregation Points</b></p> <p><b>6-42.</b> DIY used oil collection centers are required to meet the same standards as used oil generators (40 CFR 279.30).</p> <p><b>6-43.</b> Used oil collection centers are required to be licensed/ permitted and operated according to specific standards (40 CFR 279.31).</p> <p><b>6-44.</b> Used oil aggregation points are required to be operated according to the standards for used oil generators (40 CFR 279.32).</p>	<p>Verify that DIY used oil collection centers meet the requirements outlined in the sections titled Used Oil - Generators.</p> <p>Determine if the facility operates a used oil collection center.</p> <p>Verify that the collection center meets the requirements for used oil generators outlined in the sections titled Used Oil - Generators.</p> <p>Verify that the collection center is registered/licensed/permitted/recognized by a state/county/ municipal government to manage used oil.</p> <p>Verify that the used oil aggregation point is operated according to the standards outlined in the sections titled Used Oil - Generators.</p>



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<p><b>USED OIL</b></p> <p><b>Transportation</b></p> <p><b>6-45.</b> Transporters who put used oil in a truck that has previously transported hazardous waste without emptying and cleaning the truck are required to transport and handle the used oil as a hazardous waste (40 CFR 279.40(b) through 279.40(c)).</p> <p><b>6-46.</b> Used oil transporters can consolidate or aggregate loads of used oil (40 CFR 279.41).</p> <p><b>6-47.</b> Used oil transporters are required to have a USEPA identification number (40 CFR 279.42).</p>	<p>(NOTE: These requirements concerning transportation and transfer of used oil do not apply to the following:</p> <ul style="list-style-type: none"> <li>- onsite transportation</li> <li>- generators who transport shipments of used oil totaling 55 gal [208.20 L] or less from the generator to a used oil collection center</li> <li>- generators who transport shipments of used oil totaling 55 gal [208.20 L] or less from the generator to a used oil aggregation point owned by the generator</li> <li>- transportation of used oil generated by household DIYs from the initial generator to a regulated generator, collection center, aggregation point, processor/refiner, or burner.)</li> </ul> <p>Verify that used oil that is contaminated with hazardous waste is transported as a hazardous waste according to the standards in the Hazardous Waste Management section.</p> <p>(NOTE: Facilities that transport used oil imported from abroad or exported outside of the United States must meet these requirements while in the boundaries of the United States.)</p> <p>Verify that transporters conduct only incidental processing operations such as settling and water separation unless they also comply with the requirements for processors and refiners.</p> <p>Verify that, if the facility is transporting used oil, it has a USEPA identification number.</p>

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<p><b>6-48.</b> Transporters must meet specific requirements for deliveries and shipments of used oil (40 CFR 279.43(a) through 279.43(b)).</p>	<p>Verify that all used oil is delivered to:</p> <ul style="list-style-type: none"> <li>- another used oil transporter if the transporter has a USEPA identification number</li> <li>- a used oil processing/re-refining facilities with a USEPA identification number</li> <li>- an off-specification used oil burner facility with a USEPA identification number</li> <li>- an on-specification used oil burner facility.</li> </ul> <p>Verify that DOT labeling, packaging, and placarding requirements are met.</p>
<p><b>6-49.</b> Transporters are required to take specific actions if there is a discharge of used oil during transportation (40 CFR 279.43(c)).</p>	<p>Verify that, if there is a discharge, the following are done:</p> <ul style="list-style-type: none"> <li>- notification of authorities (NRC)</li> <li>- containment of the discharge</li> <li>- submit a written report to the DOT</li> <li>- cleanup.</li> </ul>
<p><b>6-50.</b> Transporters are required to determine if the total halogen content of used oil being transported or stored at a transfer facility is above or below 1000 ppm (40 CFR 279.44).</p>	<p>Verify that the transporter determines the total halogen content of the used oil by one of the following methods:</p> <ul style="list-style-type: none"> <li>- testing the used oil</li> <li>- applying knowledge of halogen content of the used oil in light of the materials or processes used.</li> </ul> <p>Verify that records of analyses are kept for 3 yr.</p>
<p><b>6-51.</b> Used oil transporters are required to keep records for used oil shipments and deliveries (40 CFR 279.46).</p>	<p>Verify that the following records are kept for each shipment accepted for transport:</p> <ul style="list-style-type: none"> <li>- name and address of the generator, transporter, or processor/re-refiner who provided the used oil for transport</li> <li>- USEPA identification number</li> <li>- the quantity of oil accepted</li> <li>- the day of acceptance</li> <li>- signature of receipt.</li> </ul>

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<p><b>6-51. (continued)</b></p>	<p>Verify that the following records are kept for each delivery to another used oil transporter or to a used oil burner, processor/re-refiner, or disposal facility and for export/import activities:</p> <ul style="list-style-type: none"> <li>- the name and address of the receiving facility or transporter</li> <li>- the USEPA identification number of the receiving facility or transporter</li> <li>- the quantity of used oil delivered</li> <li>- the date of delivery</li> <li>- the signature, dated upon receipt of the used oil, of a representative of the receiving facility or transporter.</li> </ul> <p>Verify that records are maintained for 3 yr.</p>
<p><b>6-52.</b> Transfer facilities are required to store used oil in tanks and containers that meet specific requirements (40 CFR 279.45 (b) through 279.45(g)).</p>	<p>Verify that the tanks and containers at transfer facilities meet the requirements outlined in the section Used Oil - Generators.</p> <p>Verify that containers and ASTs used to store used oil have secondary containment that meets the following minimum requirements:</p> <ul style="list-style-type: none"> <li>- dikes, berms, or retaining walls</li> <li>- a floor that covers the entire area within the dikes, berms, or retaining walls</li> <li>- the system is impervious.</li> </ul> <p>Verify that containers and aboveground tanks are labeled with the phrase USED OIL.</p> <p>Verify that fill pipes used to transfer used oil into underground storage tanks at transfer facilities are labeled USED OIL.</p>
<p><b>6-53.</b> Specific steps must be followed in response to a release at a transfer facility (40 CFR 279.45(h)).</p>	<p>Verify that the following steps are taken:</p> <ul style="list-style-type: none"> <li>- the release is stopped</li> <li>- the release is contained</li> <li>- the release is cleaned up and properly managed</li> <li>- necessary repairs and replacements are done.</li> </ul>



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<p><b>USED OIL</b></p> <p><b>Burners</b></p> <p><b>6-54.</b> Off-specification used oil fuel may be burned for energy recovery in industrial furnaces and boilers (40 CFR 279.12(c), 279.60(a), and 279.61 (a)).</p> <p><b>6-55.</b> Used oil burners are required to have a USEPA identification number (40 CFR 279.60(a) and 279.62).</p> <p><b>6-56.</b> Used oil burners are required to determine if used oil is a hazardous waste (40 CFR 279.60(a) and 279.63).</p>	<p>Determine if the facility burns used oil fuel for the purpose of energy recovery.</p> <p>Verify that off-specification used oil fuel is only burned for energy recovery in one of the following:</p> <ul style="list-style-type: none"> <li>- an industrial furnace</li> <li>- a boiler that is identified as one of the following: <ul style="list-style-type: none"> <li>- industrial boilers that are located on the site of a facility engaged in a manufacturing process where substances are transformed into new products by mechanical or chemical processes</li> <li>- utility boilers used to produce electric power steam, heated or cooled air, or other gases or fluids for sale</li> <li>- used oil-fired space heaters</li> </ul> </li> <li>- hazardous waste incinerators.</li> </ul> <p>(NOTE: The following are exempt from meeting these requirements:</p> <ul style="list-style-type: none"> <li>- the burning of used oil by a generator in an onsite space heater</li> <li>- the burning of used oil by a processor/re-refiner for purposes of processing.)</li> </ul> <p>Verify that the facility has a USEPA identification number.</p> <p>(NOTE: The following are exempt from meeting these requirements:</p> <ul style="list-style-type: none"> <li>- the burning of used oil by a generator in an onsite space heater</li> <li>- the burning of used oil by a processor/re-refiner for purposes of processing.)</li> </ul> <p>Verify that the used oil is either tested or the used oil burner applies their knowledge of the halogen content of the used oil in light of the materials or processes used, or using information from another source.</p> <p>Verify that copies of analyses are maintained for 3 yr.</p>

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<p><b>6-57.</b> Used oil burners are required to store used oil in tanks and containers that meet specific requirements (40 CFR 279.60(a) and 279.64(a) through 279.64(f)).</p> <p><b>6-58.</b> Specific steps must be followed in response to a release at a used oil burner facility (40 CFR 279.60(a) and 279.64 (g)).</p> <p><b>6-59.</b> Used oil burners are required to keep a record of each used oil shipment accepted for burning (40 CFR 279.60(a) and 279.65).</p>	<p>Verify that the tanks and containers at used oil burners meet the requirements outlined in the section titled Used Oil - Generators.</p> <p>Verify that containers and ASTs used to store used oil have secondary containment that meets the following minimum requirements:</p> <ul style="list-style-type: none"> <li>- dikes, berms, or retaining walls</li> <li>- a floor that covers the entire area within the dikes, berms, or retaining walls</li> <li>- the system is impervious.</li> </ul> <p>Verify that containers and aboveground tanks are labeled with the phrase USED OIL.</p> <p>Verify that fill pipes used to transfer used oil into underground storage tanks at used oil burners are labeled USED OIL.</p> <p>(NOTE: The following are exempt from meeting these requirements:</p> <ul style="list-style-type: none"> <li>- the burning of used oil by a generator in an onsite space heater</li> <li>- the burning of used oil by a processor/re-refiner for purposes of processing.)</li> </ul> <p>Verify that the following steps are taken:</p> <ul style="list-style-type: none"> <li>- the release is stopped</li> <li>- the release is contained</li> <li>- the release is cleaned up and properly managed</li> <li>- necessary repairs and replacements are done.</li> </ul> <p>(NOTE: The following are exempt from meeting these requirements:</p> <ul style="list-style-type: none"> <li>- the burning of used oil by a generator in an onsite space heater</li> <li>- the burning of used oil by a processor/re-refiner for purposes of processing.)</li> </ul> <p>Verify that some form of records are kept that documents the following:</p> <ul style="list-style-type: none"> <li>- the name and address of the transporter who delivered the used oil</li> <li>- the name and address of the generator or processor or re-refiner from whom the used oil was sent to the burner</li> <li>- the USEPA identification numbers of the transporter or, if applicable, the generator, processor/re-refiner</li> <li>- the quantity of used oil accepted</li> <li>- the date of acceptance.</li> </ul> <p>Verify that records are maintained for at least 3 yr.</p>



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<b>6-59. (continued)</b>	(NOTE: The following are exempt from meeting these requirements: - the burning of used oil by a generator in an onsite space heater - the burning of used oil by a processor/re-refiner for purposes of processing.)
<b>6-60.</b> Before a burner can accept the first shipment of off-specification used oil fuel from a generator, transporter, or processor/re-refiner, the burner must provide a one-time written notice (40 CFR 279.60(a) and 279.66).	Verify that the burner issued a notice to the USEPA stating the location and description of the activity and certifying that the used oil will only be burned in an industrial furnace or boiler.  Verify that the certification is maintained for 3 yr from the date of the last shipment received.  (NOTE: The following are exempt from meeting these requirements: - the burning of used oil by a generator in an onsite space heater - the burning of used oil by a processor/re-refiner for purposes of processing.)



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**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>USED OIL</b></p> <p><b>Marketing</b></p> <p><b>6-61.</b> Used oil fuel marketers may only initiate a shipment of off-specification used oil to a used oil burner who has a USEPA identification number and burns the used oil in an industrial furnace or boiler (40 CFR 279.70(b) and 279.71).</p> <p><b>6-62.</b> Generators, transporters, processor/re-refiners, or burners must determine if the fuel oil is off or on-specification (40 CFR 279.70(b) and 279.72).</p> <p><b>6-63.</b> Used oil fuel marketers are required to have a USEPA identification number (40 CFR 279.70(b) and 279.73).</p>	<p>Determine if the facility is marketing off-specification used fuel oil.</p> <p>Verify that it is going to an appropriate used oil burner.</p> <p>(NOTE: These requirements do not apply to the following:</p> <ul style="list-style-type: none"> <li>- persons who direct shipments of on-specification used oil and who are not the first person to claim the oil is on-specification</li> <li>- used oil generators and transporters who transport used oil received only from generators, unless the generator or transporter directs a shipment of off-specification used oil from their facility to a used oil burner.)</li> </ul> <p>Verify that a determination as to whether the used oil fuel is off or on-specification is made by analyses or obtaining copies of other analyses.</p> <p>Verify that records of analyses are maintained for 3 yr.</p> <p>(NOTE: These requirements do not apply to the following:</p> <ul style="list-style-type: none"> <li>- persons who direct shipments of on-specification used oil and who are not the first person to claim the oil is on-specification</li> <li>- used oil generators and transporters who transport used oil received only from generators, unless the generator or transporter directs a shipment of off-specification used oil from their facility to a used oil burner.)</li> </ul> <p>Verify that the facility has a USEPA identification number.</p> <p>(NOTE: These requirements do not apply to the following:</p> <ul style="list-style-type: none"> <li>- persons who direct shipments of on-specification used oil and who are not the first person to claim the oil is on-specification</li> <li>- used oil generators and transporters who transport used oil received only from generators, unless the generator or transporter directs a shipment of off-specification used oil from their facility to a used oil burner.)</li> </ul>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<p><b>6-64.</b> Any used oil marketer that directs a shipment of used oil to a burner is required to keep specific records (40 CFR 279.70(b) and 279.74).</p>	<p>Verify that records containing the following information are kept of each shipment of off-specification oil:</p> <ul style="list-style-type: none"> <li>- the name and address of the transporter who delivers the used oil to the burner</li> <li>- the name and address of the burner who will receive the used oil</li> <li>- the USEPA identification number of the burner</li> <li>- the quantity of used oil shipped</li> <li>- the date of shipment.</li> </ul> <p>Verify that records containing the following information are kept of each shipment of on-specification oil:</p> <ul style="list-style-type: none"> <li>- the name and address of the facility receiving the shipment</li> <li>- the quantity of used oil delivered</li> <li>- a cross-reference to the record of used oil analysis</li> <li>- the date of shipment.</li> </ul> <p>Verify that records are maintained for 3 yr.</p> <p>(NOTE: These requirements do not apply to the following:</p> <ul style="list-style-type: none"> <li>- persons who direct shipments of on-specification used oil and who are not the first person to claim the oil is on-specification</li> <li>- used oil generators and transporters who transport used oil received only from generators, unless the generator or transporter directs a shipment of off-specification used oil from their facility to a used oil burner.)</li> </ul>
<p><b>6-65.</b> Before a used oil generator, transporter, or processor/re-refiner directs the first shipment of off-specification used oil to a burner, they must obtain a one-time written and signed notice from the burner (40 CFR 279.70(b) and 279.75).</p>	<p>Verify that notice from the burner has been received that indicates the burner notified the USEPA of the location and used oil management activities and that the burner will only burn off-specification oil in approved furnaces and boilers.</p> <p>Verify that a copy of the notice is kept for 3 yr from the date the last shipment of off-specification used oil is shipped to the burner.</p>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**  
**July 1995**

**USED OIL**

**Dust Suppression**

6-66. Used oil cannot be used for dust suppression unless allowed by the state (40 CFR 279.82).

Verify that used oil is not used for dust suppression at the facility.



## Appendix 6-1

### Used Oil Classifications (40 CFR 279.10 and 279.11)

#### Used Oils Which Are Required to be Handled According to the Requirements in 40 CFR 279 (40 CFR 279.10(b)(2)(ii), 279.10(b)(2)(iii), 279.10(b)(3), 279.10(c)(2), 279.10(d), 279.10(e)(2), and 279.10(i))

1. Used oil containing more than 1000 ppm of total halogens when the generator has demonstrated that the used oil does not contain hazardous waste.
2. Used metalworking oils/fluids containing chlorinated paraffins when they are recycled or disposed of and the generator has demonstrated that the used oil does not contain hazardous waste.
3. Used oils contaminated with CFCs that have been mixed with used oil from sources other than refrigeration units and the generator has demonstrated that the used oil does not contain hazardous waste.
4. Materials produced from used oil that are burned for energy recovery.
5. Mixtures of used oil and hazardous waste if the resultant mixture does not exhibit any characteristics of hazardous waste.
6. Mixtures of used oil and a waste that is hazardous solely because it exhibits the characteristic of ignitability and is not a listed waste.
7. Mixtures of used oil and conditionally exempt small quantity generator (CESQG) hazardous waste.
8. Mixtures of used oil and fuels or other fuel products except those marked onsite by the generator for use in the generators own vehicles if the used oil and the diesel fuel have been mixed.
9. Used oil burned for energy recovery and any fuel produced from used oil that exceeds the following allowable limits:

Arsenic	5 ppm maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Flash Point	100 ° F minimum
Total halogens	4000 ppm maximum

10. Materials containing or otherwise contaminated with used oil that are burned for energy recovery.
11. Used oil drained or removed from materials containing or otherwise contaminated with used oil.
12. Used oil at marketers or burners with any quantifiable level of PCBs (the standards in 40 CFR 761.20(a) must also be met for this type of oil).

(continued)

## **Appendix 6-1 (continued)**

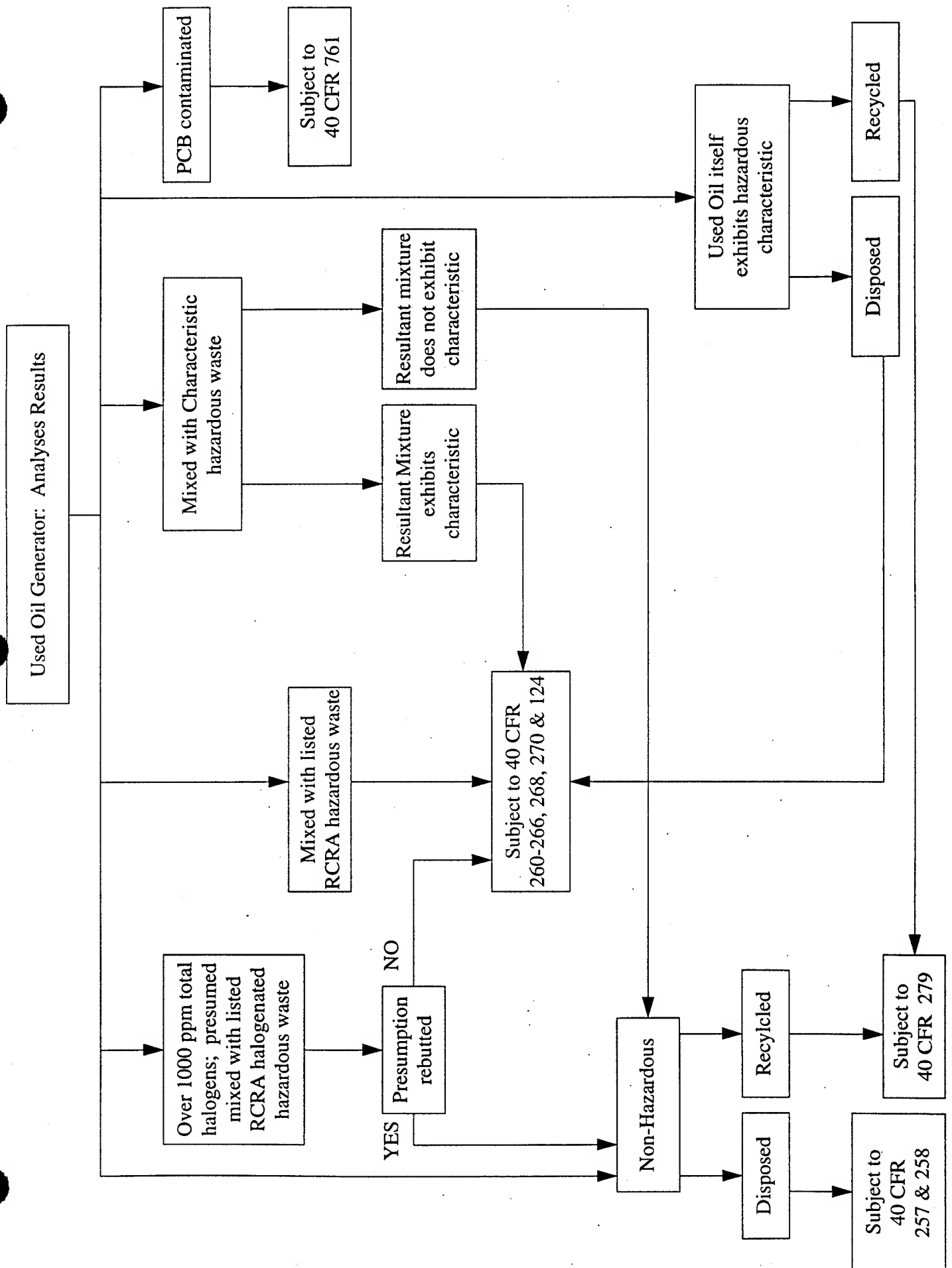
### **Used Oil that is Required to be Handled as a Hazardous Waste (40 CFR 279.10(b)).**

1. Mixtures of used oil and listed hazardous waste.
2. Used oil containing more than 1000 ppm total halogens
3. Used metalworking oils/fluids containing chlorinated paraffins if processed through a tolling agreement.
4. Used oil contaminated with CFCs removed from refrigeration units where the CFCs are destined for reclamation.
5. Mixtures of used oil and hazardous waste if the resultant mixture exhibits characteristics of a hazardous waste.

### **Used Oil that is not Subject to the Requirements of 40 CFR 279, Nor is it to be Handled as a Hazardous Waste, Unless Testing Indicates Hazardous Constituents (40 CFR 279.10(c)(1), 279.10(d)(2), 279.10(e)(1), 279.10(e)(3), 279.10(e)(4), and 279.10(f) through 279.10(h)).**

1. Mixtures of used oil and diesel fuel mixed onsite by the generator of the used oil for use in the generator's own vehicles.
2. Materials that are reclaimed from used oil that are used beneficially and are not burned for energy recovery or used in a manner constituting disposal.
3. Materials derived from used oil that are disposed of or used in a manner constituting disposal.
4. Used oil re-refining distillation bottoms that are used as feedstock to manufacture asphalt products.
5. Wastewater discharges with de minimis quantities of used oil.
6. Used oil within a crude oil or natural gas pipeline.
7. Used oil on vessels.
8. Materials containing or otherwise contaminated with used oil from which the used oil has been properly drained or removed so that no signs of visible free-flowing remains.







<b>FACILITY:</b>	<b>COMPLIANCE CATEGORY:</b> <b>PETROLEUM, OIL, AND LUBRICANT</b> <b>(POL) MANAGEMENT</b> Fish and Wildlife Service	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> NA   C   RMA	<b>REVIEWER CHECKS:</b>		

**SECTION 7**  
**SOLID WASTE MANAGEMENT**

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**The contents of this section are the minimum requirements the auditor must review. The auditor must also review applicable state and local regulations.**

## SECTION 7

### SOLID WASTE MANAGEMENT

#### A. Applicability

This section addresses the collection, storage, and disposal of solid waste at FWS facilities. Solid waste is considered to be nonhazardous trash, rubbish, garbage, bulky wastes, liquids, or sludges generated by any facility's operations and activities. The handling and disposal of asbestos waste materials is addressed in Section 8, Special Pollutants Management.

Recycling and resource recovery activities are also included in this section because they are considered a form of solid waste management.

#### B. Federal Legislation

- *Resource Conservation and Recovery Act (RCRA)* of 1976. This is the Federal law which governs the disposal of solid waste. Subtitle D of this act, as last amended in November 1984, Public Law (PL) 98-616, 42 U.S. Code (USC) 6941-6949a, establishes Federal standards and requirements for state and regional authorities respecting solid waste disposal. The objectives of this subtitle are to assist in developing and encouraging methods for the disposal of solid waste which are environmentally sound and which maximize the utilization of valuable resources recoverable from solid waste. The objectives are to be achieved through Federal technical and financial assistance to states and regional authorities for comprehensive planning (42 USC 6941).
- *The Solid Waste Disposal Act (SWDA)* of 1965, as amended. This act requires that Federal facilities comply with all Federal, state, interstate, and local requirements concerning the disposal and management of solid wastes. These requirements include permitting, licensing, and reporting.
- *The Occupational Safety and Health Act (OSHA)*. The general purpose of this act is to assure, as much as possible, every individual working in the United States safe and healthful working conditions. The control of medical waste is one aspect of assuring safe and healthy working conditions.
- Executive Order (EO) 12088, *Federal Compliance with Pollution Standards*. This EO of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements or to correct situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.
- EO 12873, *Federal Acquisition, Recycling, and Waste Prevention*. This EO, dated 20 October 1993, mandates waste prevention and recycling as a part of an agency's daily

operations. It requires each agency to set a goal for solid waste prevention and a goal for recycling to be achieved by the year 1995. Agencies are also required to set goals for increasing the procurement of recycled and other environmentally preferable products.

- Federal regulations used to develop the checklist include:
  - EO 12088, *Federal Compliance with Pollution Control Standards*.
  - 7 CFR 330, *Federal Plant Pest Regulations, General, Plant Pests, Soil, Stone, Quarry Products, and Garbage*.
  - 29 CFR 1910.1030, *Bloodborne Pathogens*.
  - 40 CFR 240, *Guidelines for the Thermal Processing of Solid Waste*.
  - 40 CFR 241, *Guidelines for the Land Disposal of Solid Wastes*.
  - 40 CFR 243, *Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste*.
  - 40 CFR 245, *Promulgation Resource Recovery Facility Guidelines*.
  - 40 CFR 246, *Source Separation for Materials Recovery Guidelines*.

### **C. State/Local Regulations**

The Federal government set minimum national standards for municipal solid waste disposal in 40 CFR 258, but state and local governments are responsible for implementing and enforcing waste programs. States are required to develop their own programs based on the Federal regulations. Most states and municipalities have already developed their own regulations governing the permitting, licensing, and operations of landfills, incinerators, and source separation/recycling programs.

States are required to incorporate revised criteria for municipal solid waste landfills (MSWLF) into their permit programs and gain approval from U.S. Environmental Protection Agency (USEPA). States that apply for and receive USEPA approval of their programs have the opportunity to provide a lot of flexibility in implementing the regulations. This flexibility allows states to take local conditions into account and gives them the authority to alter some of the requirements. Evaluators will need to determine if a state has been granted approval for the 40 CFR 258 program in order to accurately audit a facility's compliance with the criteria. Many states have also instigated categories of special wastes which cannot be placed in landfills or dumps, or may only be disposed of under specific circumstances.

### **D. FWS/DOI Manuals**

- 561 FWS 6, *Compliance Requirements SWDA - Solid Waste*. This chapter, dated 12 June 1995 provides guidance for the handling and disposition of solid waste material at Service facilities.

### **E. Key Compliance Requirements**

- Storage/Collection - Facilities are required to store all solid wastes and materials separated for recycling so that it does not cause a fire, safety, or health hazard. All facilities are

required to operate their collection systems in a manner to protect the health and safety of personnel associated with the operation. All collection equipment is required to have a suitable cover to prevent spillage, and the equipment is to be constructed, operated, and maintained adequately. All facilities are required to collect solid wastes or materials separated for recycling according to a certain schedule, and in a safe, efficient manner (40 CFR 243.200-1, 243.201-1, 243.202-1(a) through 243.202-1(c), 243.203-1, and 243.204-1).

- Solid Waste Containers - Facility personnel should be periodically informed about materials that are prohibited from disposal in solid waste receptacles (MP).
- Recycling - FWS facilities should participate in any state or local recycling programs and reduce the volume of solid waste materials at the source whenever practical. Facilities with offices of over 100 office workers are required to recover high-grade paper. Facilities at which more than 500 families reside are required to recycle newspapers. Any facility generating 10 tons [101,605 kg] or more of waste corrugated containers per month is required to segregate or collect separately for recycling or alternate energy use (40 CFR 246.200-1 and 246.202-1).
- Specific Wastes - Bulky wastes must be disposed of according to certain methods, which differ depending on the variety of waste, i.e., automobile bodies, furniture, and appliances are required to be salvaged, or crushed and pushed onto working face near the bottom of the cell. Water treatment plant sludges, containing no free moisture, and digested or heat treated wastewater treatment plant sludges must be disposed of by covering them with soil or municipal solid wastes. Incinerator and air pollution control residues must be disposed of by covering them as necessary to prevent their becoming airborne (40 CFR 241.200-3).
- Open Dumping - Title 40 CFR 257 details the criteria for determining whether or not an activity would be considered an open dump for the purposes of state solid waste management planning under RCRA. See Appendix 7-1 for a list of the criteria that a facility or practice must meet in order for it to not be considered an open dump.
- Land Disposal Site Operations Other Than An MSWLF- Facilities are should place cover material at the end of each operating day. Land disposal sites that accept special wastes must have approval from the responsible agency and shold provide a list of the excluded itmes to regular users. Facilities that operate land disposal sites are required to operate the sites in a manner that will protect water quality and control decomposition gases and vectors. Land disposal sites are required to be designed and operated in an aesthetically acceptable manner, and to be designed, constructed, and operated to protect the health and safety of personnel. Land disposal site cover material is required to minimize fire hazards, infiltration of precipitation, odors and litter, control gas venting and vectors, discourage scavenging, and provide a pleasing appearance. Municipal solid waste and cover material must be compacted to the smallest practicable volume. The operators of land disposal sites are required to maintain records and monitoring data (40 CFR 241.200-3(a), 241.201-2, 241.201-3, 241.204-3, 241.205-3, 241.206-241.211, and 241.212-3(a)).
- Land Disposal Site Closure Other Than An MSWLF - Upon closure of a site, a detailed description is required to be recorded as required by the area's land recording authority. Facilities should survey for and be aware of old disposal sites at the facility (40 CFR 241.212-3(b)).

- **New Landfills Other Than MSWLFs** - New landfills are required to meet certain location and design criteria, which include evaluation of hydrogeology and onsite soil characteristics, and verification of easy access to vehicles. Plans for the design, construction, and operation of new sites or modification to existing sites are required to be prepared or approved by a professional engineer (40 CFR 241.202-2 and 241.203-1).
- **Medical Waste** - Contaminated reusable sharps and other regulated wastes are required to be placed in puncture resistant, color coded, leakproof containers, as soon as possible after use until properly reprocessed. Specimens of blood or other potentially infectious material are required to be placed in a container that prevents leakage during collection, handling, processing, storage, transport, or shipping, and specific labeling and handling requirements are to be followed (29 CFR 1910.1030(d)).
- **Medical Waste Containers** - All bins, cans, and other receptacles intended for reuse that have the likelihood of becoming contaminated with blood or other potentially infectious materials are required to be inspected and decontaminated on a regularly scheduled basis. Labels affixed to containers of regulated wastes, refrigerators and freezers containing blood, and other containers used to store, transport, or ship blood or other potentially infectious materials must meet specific standards, which include the biohazard symbol, and being colored a fluorescent orange with contrasting-colored lettering and symbols (29 CFR 1910.1030(d)(4)(ii)(c) and 1910.1030(g)(1)(i)).
- **Recordkeeping** - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

## **F. Key Compliance Definitions**

- **Blood** - human blood, human blood components, and products made from human blood (29 CFR 1910.1030(a)).
- **Bottom Ash** - the solid material that remains on a hearth or falls off the grate after thermal processing is complete (40 CFR 240.101(b)).
- **Bulky Wastes** - large items of solid waste such as household appliances, furniture, large auto parts, trees, branches, stumps, and other oversize wastes which large size precludes or complicates their handling by normal solid waste collection, processing, or disposal methods (40 CFR 243.101).
- **Cell** - compacted solid wastes that are enclosed by natural soil or cover material in a land disposal site (40 CFR 241.101).
- **Collection** - the act of removing solid waste (or materials which have been separated for the purpose of recycling) from a central storage point (40 CFR 243.101).
- **Commercial Solid Waste** - all types of solid waste generated by stores, offices, restaurants, warehouses, and other nonmanufacturing activities, excluding residential and industrial wastes (40 CFR 243.101).



- *Construction and Demolition Wastes* - the waste building materials, packaging and rubble resulting from the construction, renovation, repair, and demolition operation on pavements, houses, commercial buildings, and other structures (40 CFR 243.101).
- *Contaminated* - the presences or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface (29 CFR 1910.1030(a)).
- *Contaminated Sharps* - any contaminated object that can penetrate the skin, including but not limited to, needles, scalpels, broken glass, broken capillary tubes, and exposed ends of dental wires (29 CFR 1910.1030(a)).
- *Corrugated Container Waste* - discarded corrugated boxes (40 CFR 246.101).
- *Cover Material* - soil or other suitable material that is used to cover compacted solid wastes in a land disposal site (40 CFR 241.101).
- *Daily Cover* - cover material that is spread and compacted on the top and side slopes of compacted solid wastes at least at the end of each operating day in order to control vectors, fire, moisture, and erosion and to assure an aesthetic appearance (40 CFR 241.101).
- *Decontamination* - the use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface of item is rendered safe for handling, use, or disposal (29 CFR 1910.1030(a)).
- *Design Capacity* - the weight of solid waste of a specified gross calorific value that a thermal processing facility is designed to process in 24 h of continuous operation (40 CFR 240.101(d)).
- *Final Cover* - cover materials that serve the same function as daily cover but, in addition, may be permanently exposed on the surface (40 CFR 241.101).
- *Fly Ash* - suspended particles, charred paper, dust, soot, and other partially oxidized matter carried in the products of combustion (40 CFR 240.101).
- *Food Waste* - the organic residues generated by the handling, storage, sale, preparation, cooking, and serving of foods, commonly called garbage (40 CFR 243.101).
- *Garbage* - in relation to solid waste coming from outside the continental United States, it is all waste material derived in whole or in part from fruits, vegetables, meats, or other plant or animal material, and other refuse of any character whatsoever that has been associated with any such material on board any means of conveyance, and including food scraps, table refuse, galley refuse, food wrappers, or packaging materials, and other water materials from stores, food preparation areas, passengers; or crews quarters, dining rooms, or any other areas or means of conveyance. It also means meals and other food that were available for consumption by passengers and crew on an aircraft but were not consumed (7 CFR 330.400(b)).
- *Groundwater* - water present in the unsaturated zone of an aquifer (40 CFR 241.101).

- *High-Grade Paper* - letterhead, dry copy papers, miscellaneous business forms, stationary, typing paper, tablet sheets, and computer printout paper and cards, commonly sold as white ledger, computer printout and tab card grade by the wastepaper industry (40 CFR 246.101).
- *Industrial Solid Waste* - the solid waste generated by industrial processes and manufacturing that is not a hazardous waste (40 CFR 243.101).
- *Infectious Waste* - (40 CFR 240.101):
  1. equipment, instruments, utensils, and fomites of a disposable nature from the rooms of patients who are suspected to have or have been diagnosed as having a communicable disease and must, therefore, be isolated as required by public health agencies
  2. laboratory wastes such as pathological specimens and disposable fomites (any substance that may harbor or transmit pathological organisms)
  3. surgical operating room pathological specimens and disposable fomites attendant thereto and similar disposable materials from outpatient areas and emergency rooms.
- *Institutional Solid Waste* - solid wastes generated by educational, health care, correctional and other institutional facilities (40 CFR 243.101).
- *Intermediate Cover* - cover material that serves the same function as daily cover, but must resist erosion for a longer period of time, because it is applied in areas where additional cells are not to be constructed for extended periods of time (40 CFR 241.101).
- *Leachate* - liquid that has percolated through solid waste and has extracted dissolved or suspended materials from it (40 CFR 241.101).
- *Management Practice (MP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- *Medical/Pathological Wastes* - any solid waste that is generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biologicals. This does not include hazardous waste or household waste (40 CFR 259.10).
- *Municipal Solid Waste* - residential and commercial solid wastes generated within a community (40 CFR 240.101).
- *Municipal Solid Waste Landfill (MSWLF) Unit* - a discrete area of land or an excavation that received household waste and that is not a land application unit, surface impoundment, injection well, or waste pile. It may also receive other types of RCRA-D wastes, such as commercial solid waste, nonhazardous sludge, conditionally exempt small quantity generator waste, and industrial solid waste. Such a landfill may be publicly or privately owned. An MSWLF unit may be a new MSWLF unit, an existing MSWLF unit, or a lateral expansion (40 CFR 258.2).

- *Open Burning* - burning of solid wastes in the open, such as in an open dump (40 CFR 240.101(r)).
- *Open Dump* - a land disposal site at which solid wastes are disposed of in a manner that does not protect the environment, are susceptible to open burning, and are exposed to the elements, vectors, and scavengers (40 CFR 240.101).
- *Recoverable Resource* - materials that still have useful physical, chemical, or biological properties after serving their original purpose and can, therefore, be reused or recycled for the same or other purposes (40 CFR 245.101).
- *Recycled Material* - a material that is utilized in place of a primary, raw, or virgin material in manufacturing a product (40 CFR 245.101).
- *Recycling* - the process by which recovered materials are transformed into new products (40 CFR 245.101).
- *Regulated Wastes* - liquid or semi-liquid blood or other potentially infectious materials, contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling, contaminated sharps, and pathological and microbiological wastes containing blood or other potentially infectious materials (29 CFR 1910.1030(a)).
- *Residential Solid Waste* - the wastes generated by the normal activities of households, including, but not limited to, food wastes, rubbish, ashes, and bulky wastes (40 CFR 243.101).
- *Runoff* - the portion of precipitation that drains from an area as surface flow (40 CFR 241.101).
- *Sanitary Landfill* - a land disposal site employing an engineered method of disposing of solid wastes on land in a manner that minimizes environmental hazards by spreading the solid wastes in thin layers, compacting the solid wastes to the smallest practical volume, and applying and compacting cover material at the end of each operating day (40 CFR 240.101).
- *Separate Collection* - collection of recyclable materials which have been separated at the point of generation and keeping those materials separated from other collected solid waste in separate compartments of a single collection vehicle or through the use of separate collection vehicles (40 CFR 246.101).
- *Sludge* - the accumulated semiliquid suspension of settled solids deposited from wastewaters or other fluids in tanks or basins (40 CFR 240.101).
- *Solid Waste* - garbage, refuse, sludge, and other discarded solid materials resulting from industrial and commercial operations and from community activities. It does not include solids or dissolved materials in domestic sewage or other significant pollutants in water resources (40 CFR 240.101).

- *Source Separation* - the setting aside of recyclable materials at their point of generation by the generator (40 CFR 246.101).
- *Special Wastes* - nonhazardous solid wastes requiring handling other than that normally used for municipal solid wastes (40 CFR 240.101).
- *Transfer Station* - a station at which solid wastes are concentrated for transport to a processing facility or land disposal site. A transfer station may be fixed or mobile (40 CFR 243.101).
- *Universal Precautions* - an approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens (29 CFR 1910.1030(a)).
- *Vector* - a carrier, usually an arthropod, that is capable of transmitting a pathogen from one organism to another (40 CFR 240.202).
- *Working Face* - that portion of the land disposal site where solid wastes are discharged and are spread and compacted prior to the placement of cover material (40 CFR 241.101).

## SOLID WASTE MANAGEMENT PROTOCOL

### GUIDANCE FOR CHECKLIST USERS

	REFER TO CHECKLIST ITEMS:	REFER TO PAGE NUMBER:
All Facilities	7-1 through 7-5	7-13
Storage/Collection of Solid Waste	7-6 through 7-13	7-15
Recycling	7-14 and 7-15	7-19
Land Disposal Sites Other Than MSWLFs		
Specific Wastes	7-16 through 7-19	7-21
Operations	7-20 through 7-39	7-23
Closure	7-40	7-29
Site Criteria For New Landfills Other Than MSWLFs	7-41 through 7-43	7-31
Medical Waste	7-44 through 7-49	7-33



## **SOLID WASTE MANAGEMENT**

### **Records To Review**

- Record of current nonhazardous solid waste management practices
- Documentation of locations (map) and descriptions of all nonhazardous waste storage, and disposal facilities
- Records of operational history of all active and inactive disposal facilities
- State and Federal inspection reports
- Environmental monitoring procedures or plans
- Records of resource recovery practices, including the sale of materials for the purpose of recycling
- Solid waste removal contracts and inspection records
- Operating record for onsite municipal solid waste landfills

### **Physical Features To Inspect**

- Resource recovery facilities
- Incineration and land disposal facilities (active and inactive)
- Areas where nonhazardous waste is disposed
- Construction debris areas
- Waste receptacles
- Solid waste vehicle storage and washing areas
- Compost facilities
- Transfer stations
- Recycling centers





**COMPLIANCE CATEGORY:  
SOLID WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>ALL FACILITIES</b></p> <p><b>7-1.</b> The current status of any ongoing or unresolved consent orders, compliance agreements, notices of violation (NOVs), inter-agency agreements, or equivalent state enforcement actions is required to be examined (a finding under this checklist item will have the enforcement action/identifying information as the citation).</p> <p><b>7-2.</b> FWS facilities are required to comply with state and local solid waste regulations (EO 12088, Section 1-1).</p>	<p>Determine if noncompliance issues have been resolved by reviewing a copy of the previous report, consent orders, compliance agreements, NOVs, inter-agency agreements, or equivalent state enforcement actions.</p> <p>Verify that the facility is complying with state and local solid waste requirements.</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies.</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- license or permit requirements for existing onsite landfills</li> <li>- requirements for filing a closure plan for onsite landfills specifying monitoring and inspection procedures</li> <li>- design and operation specifications for solid waste receptacles</li> <li>- disposal of solid waste offsite only at licensed or permitted facilities</li> <li>- design and policy procedures of thermal processing of solid waste</li> <li>- analysis for hazardous properties of ash residues and sludge from air pollution control devices at coal-fired facility heating plant operations before sale or disposal</li> <li>- handling and disposal of medical, pathological, and infectious waste</li> <li>- recycling requirements</li> <li>- disposal of household wastes</li> <li>- construction/demolition debris</li> <li>- yard waste</li> <li>- disposal of used tires.)</li> </ul>

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**7-3.** Facilities will meet regulatory requirements issued since the finalization of the handbook (a finding under this checklist item will have the citation of the new regulation as a basis of finding).

Determine if any new regulations concerning solid waste have been issued since the finalization of the handbook.

Verify that the facility is in compliance with newly issued regulations.

**7-4.** FWS facilities should report all NOV's to the Region and the Service Pollution Control Office (SPCO) (MP).

Determine if the facility has received an NOV relating to solid waste management.

Verify that the NOV was reported to the Region and the SPCO.

**7-5.** Service facilities are required to maintain a permanent onsite record copy of any contracts for waste disposal and documentation of the final place of disposal (561 FW 5.6B(4)).

Verify that the facility has copies of any contracts for waste disposal and documentation of the final place of disposal.

(NOTE: If the waste is a hazardous waste, this should be written up under the appropriate finding in the hazardous waste checklist.)

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>STORAGE/ COLLECTION OF SOLID WASTE</b></p> <p>7-6. Facilities are required to store all solid wastes and all materials separated for recycling according to specific guidelines (40 CFR 243.200-1).</p> <p>7-7. All facilities are required to operate their collection systems in a manner to protect the health and safety of personnel associated with the operation (40 CFR 243.201-1).</p>	<p>(NOTE: Federal agencies, that have decided not to adopt the requirements contained in 40 CFR 243, are required to provide a report of the analysis and rationale used.)</p> <p>Verify that all solid wastes are stored so as not to cause a fire, health, or safety hazard.</p> <p>Verify that all solid waste containing food wastes are stored in covered or closed containers which are nonabsorbent, leakproof, durable, easily cleaned, and designed for safe handling.</p> <p>Verify that solid waste containers are of an adequate size and number to contain all waste generated between collections.</p> <p>Verify that bulky wastes are stored so as not to create a nuisance and to avoid the accumulation of solid waste and water in and around the bulky items.</p> <p>Verify that reusable containers are capable of being serviced without the collector coming into contact with the waste.</p> <p>Verify that the collection system is operated safely.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>7-8.</b> Facilities are required to maintain collection equipment according to certain standards if such equipment is considered to be operating in interstate or foreign commerce (40 CFR 243.202-1(a)).</p>	<p>Verify that all vehicles used for the collection and transportation of solid waste meet all applicable standards established by the Federal Government including:</p> <ul style="list-style-type: none"> <li>- <i>Motor Carrier Safety Standards</i> (49 CFR 390 through 396).</li> <li>- <i>Noise Emission Standards for Motor Carriers Engaged in Interstate Commerce</i> (40 CFR 202).</li> <li>- <i>Federal Motor Vehicle Safety Standards</i> (49 CFR 500 through 580) (Federally owned collection equipment only).</li> </ul>
<p><b>7-9.</b> All collection equipment is required to meet specific criteria (40 CFR 243.202-1(b) and 243.202-1(d)).</p>	<p>Verify that all vehicles used for collection and transportation of solid wastes or materials separated for recycling are enclosed and have suitable cover to prevent spillage.</p> <p>Verify that equipment used in the compaction, collection, and transportation of solid waste or materials separated for recycling are constructed, operated, and maintained adequately.</p> <p>Verify that the following types of equipment meet that standards established by the American National Standards Institute (ANSI):</p> <ul style="list-style-type: none"> <li>- rear-loading compaction equipment</li> <li>- side-loading compaction equipment</li> <li>- front-loading compaction equipment</li> <li>- tilt-frame equipment</li> <li>- hoist-type equipment</li> <li>- satellite vehicles</li> <li>- special collection compaction equipment</li> <li>- stationary compaction equipment.</li> </ul>
<p><b>7-10.</b> All facilities are required to collect solid wastes or materials separated for recycling according to a certain schedule (40 CFR 243.203-1).</p>	<p>Verify that solid wastes which contain food wastes are collected at a minimum of once during each week.</p> <p>Verify that bulky wastes are collected at a minimum of once every 3 mo.</p> <p>Verify that all wastes are collected with sufficient frequency to inhibit the propagation or attraction of vectors and the creation of nuisances.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>7-11.</b> Facilities are required to collect solid wastes in a safe, efficient manner (40 CFR 243.204-1).</p> <p><b>7-12.</b> As a MP, facility industrial shop waste receptacles should be inspected quarterly to verify that hazardous wastes are not being deposited (MP).</p> <p><b>7-13.</b> Service facilities are required to keep personnel informed about proper waste disposal procedures (561 FW 5.6B(11)).</p>	<p>Verify that solid wastes or materials separated for recycling are collected in a safe, efficient manner.</p> <p>Verify that the collection vehicle operator immediately cleans up any spillage caused by his operations.</p> <p>Verify that receptacles were inspected by reviewing records and interviewing personnel.</p> <p>Verify that corrective actions were taken where indicated.</p> <p>Verify that hazardous waste is not present in the solid waste receptacles at shops by a visual check.</p> <p>Verify that a program exists at the facility to keep personnel informed about proper waste disposal practices.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>RECYCLING</b></p> <p><b>7-14.</b> Facilities should participate in any state or local recycling programs and reduce the volume of solid waste materials at the source whenever practical (MP).</p> <p><b>7-15.</b> Facilities with office facilities of over 100 office workers are required to recover high-grade paper (40 CFR 246.200-1).</p>	<p>Verify that a solid waste reduction program exists.</p> <p>Verify that recycling programs are in compliance with applicable state or local requirements.</p> <p>Verify that reusable or marketable materials are collected at regular intervals.</p> <p>Determine if the facility has over 100 office workers.</p> <p>Verify that high-grade paper is separated at the source of generation.</p> <p>Verify that high-grade paper is separately collected.</p> <p>Verify that high-grade paper is sold for recycling.</p>





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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>LAND DISPOSAL SITES OTHER THAN MSWLFs</b></p> <p><b>Specific Wastes</b></p> <p><b>7-16.</b> Facilities are required to identify what wastes can and cannot be accepted at the disposal facility in conjunction with the responsible agency (40 CFR 241.200-1).</p> <p><b>7-17.</b> Bulky wastes should be disposed of according to certain methods (MP).</p> <p><b>7-18.</b> Water treatment plant sludges containing no free moisture and digested or heat treated wastewater treatment plant sludges should be disposed of according to certain methods (MP).</p> <p><b>7-19.</b> Incinerator and air pollution control residues should be disposed of according to certain methods (MP).</p>	<p>Verify that the facility has specifically identified what wastes can and cannot be accepted for disposal at the site.</p> <p>Verify that automobile bodies, furniture, and appliances are either salvaged or crushed and pushed onto the working face near the bottom of the cell.</p> <p>Verify that demolition and construction debris, tree stumps, and large timbers are pushed onto the working face near the bottom of the cell.</p> <p>(NOTE: This MP is based on recommendations found in 40 CFR 241.200-3(b).)</p> <p>Verify that water treatment plant sludges containing no free moisture and digested or heat treated wastewater treatment plant sludges are covered with soil or municipal solid wastes.</p> <p>(NOTE: This MP is based on recommendations found in 40 CFR 241.200-3(d).)</p> <p>Verify that incinerator and air pollution control residues are incorporated into the face and covered as necessary to prevent them from becoming airborne.</p> <p>(NOTE: This MP is based on recommendations found in 40 CFR 241.200-3(e).)</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>LAND DISPOSAL SITES OTHER THAN MSWLFs</b></p> <p><b>Operations</b></p> <p><b>7-20.</b> Open dumping is prohibited at the facility (40 CFR 257.1(a)(2)).</p> <p><b>7-21.</b> Facilities should place cover material on land disposal sites at the end of each operating day (MP).</p> <p><b>7-22.</b> Using information from the generation sources on the facility, the disposal facility operator, and the responsible agency are required to determine specific wastes that are excluded from disposal and identify them in plans (40 CFR 241.201-1).</p> <p><b>7-23.</b> Facilities which operate land disposal sites should provide a list of excluded materials to regular users (MP).</p>	<p>Verify that open dumping is not practiced at the facility.</p> <p>(NOTE: See Appendix 7-1 for a description of what constitutes open dumping.)</p> <p>Verify that cover material is put in place daily by arriving at the site before it opens.</p> <p>(NOTE: This MP is based on recommendations in 40 CFR 241.200-3(a).)</p> <p>Verify that the disposal facility has designated what wastes are excluded from disposal at the site.</p> <p>Verify that the list of excluded wastes is documented in a plan.</p> <p>Verify that a list of excluded materials is displayed prominently at the site entrance.</p> <p>Verify that a list of excluded materials is given to all regular users of the site.</p> <p>(NOTE: This MP is based on recommendations found in 40 CFR 241.201-3.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>7-24.</b> The location, construction, and design of land disposal sites are required to meet the most stringent of applicable water quality standards and/or be constructed, located, designed, and operated in a manner to provide adequate protection to ground and surface water used as drinking water supplies (40 CFR 241.204-1).</p>	<p>Verify that applicable water quality standards are met and ground and surface water used as drinking water supplies are protected.</p>
<p><b>7-25.</b> Land disposal sites should be operated in a manner which will protect water quality (MP).</p>	<p>Verify that surface water course and runoff are diverted from the land disposal site.</p> <p>Verify that the land disposal site is constructed and graded to promote rapid surface water runoff without excessive erosion.</p> <p>Verify that regrading is done as necessary to avoid ponding of precipitation and to maintain cover material integrity.</p> <p>Verify that siltation or retention basins or other approved methods of retarding runoff are used where necessary to avoid stream siltation or flooding problems.</p> <p>Verify that leachate collection and treatment systems are used where necessary to protect groundwater and surface water resources.</p> <p>Verify that municipal solid wastes and leachate are not in contact with groundwater or surface water.</p> <p>(NOTE: This MP is based on recommendations found in 40 CFR 241.204-3.)</p>
<p><b>7-26.</b> Land disposal sites should operate in a manner which will protect air quality (MP).</p>	<p>Verify that there is no open burning of municipal solid wastes.</p> <p>Verify that dust control measures are initiated as necessary.</p> <p>(NOTE: This MP is based on recommendations found in 40 CFR 241.205-3.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>7-27.</b> Land disposal sites are required to control decomposition gases as necessary to avoid posing a hazard to occupants of adjacent property (40 CFR 241.206-1).</p>	<p>Verify that land disposal sites are controlling decomposition gases.</p>
<p><b>7-28.</b> Land disposal sites should control decomposition gases according to the following recommended procedures (MP).</p>	<p>Verify that decomposition gases are not allowed to migrate laterally from the land disposal site.</p> <p>Verify that decomposition gases do not pose an explosion or toxicity hazard.</p> <p>(NOTE: This MP is based on recommendations found in 40 CFR 241.206-3.)</p>
<p><b>7-29.</b> Land disposal sites are required to control vectors (40 CFR 241.207-1).</p>	<p>Verify that conditions are maintained that are unfavorable for the harboring, feeding, and breeding of vectors.</p>
<p><b>7-30.</b> Land disposal sites are required to be designed and operated in an aesthetically acceptable manner (40 CFR 241.208-1).</p>	<p>Verify that the disposal site is designed and operated in an aesthetically acceptable manner.</p>
<p><b>7-31.</b> For the land disposal site to be aesthetically acceptable, specific practices should be followed (MP).</p>	<p>Verify that blowing litter is controlled through portable litter fences or other devices.</p> <p>Verify that wastes that are easily moved by wind are covered as necessary to prevent their becoming airborne.</p> <p>Verify that onsite vegetation is cleared only as necessary.</p> <p>Verify that natural windbreaks are maintained.</p> <p>Verify that buffer strips and/or berms are used to screen the site from nearby residences and major roadways.</p> <p>Verify that salvage material is removed from the site frequently.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>7-31. (continued)</b></p> <p><b>7-32.</b> Land disposal site cover material must meet certain criteria (40 CFR 241.209-1).</p> <p><b>7-33.</b> Cover material should be applied according to specific recommendations (MP).</p> <p><b>7-34.</b> Municipal solid waste and cover material must be compacted to the smallest practicable volume (40 CFR 241.210-1).</p>	<p>(NOTE: This MP is based on recommendations found in 40 CFR 208-3.)</p> <p>Verify that cover material is applied as necessary to:</p> <ul style="list-style-type: none"> <li>- minimize fire hazards</li> <li>- minimize infiltration of precipitation</li> <li>- minimize odors</li> <li>- minimize blowing litter</li> <li>- control gas venting</li> <li>- control vectors</li> <li>- discourage scavenging</li> <li>- provide a pleasing appearance.</li> </ul> <p>Verify that cover material is applied daily regardless of weather.</p> <p>Verify that the thickness of the compacted daily cover is no less than 6 in. [15.24 cm].</p> <p>Verify that intermediate cover is applied on areas where additional cells are not to be constructed for extended periods of time.</p> <p>Verify that final cover is applied on each area as it is completed or if the area is to remain idle for over 1 yr.</p> <p>Verify that the surface grade promotes surface water runoff without erosion to minimize infiltration.</p> <p>Verify that intermediate cover is at least 1-ft [0.30-m] thick and final cover is at least 2-ft [0.61-m] thick.</p> <p>(NOTE: This MP is based on recommendations found in 40 CFR 241.209-3.)</p> <p>Verify that the solid waste and cover material is compacted to the smallest practicable volume.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>7-35.</b> Compaction of wastes and cover materials should be done according to recommended procedures (MP).</p>	<p>Verify that, on an operating day, municipal solid waste handling equipment is capable of performing the following functions:</p> <ul style="list-style-type: none"> <li>- spread solid waste in layers no more than 2 ft [0.61 m] thick while confining it to the smallest practicable area</li> <li>- compact the spread solid wastes to the smallest practicable volume</li> <li>- place, spread, and compact the cover material daily.</li> </ul> <p>(NOTE: This MP is based on recommendations found in 40 CFR 241.210-2.)</p>
<p><b>7-36.</b> Land disposal sites are required to be designed, constructed, and operated to protect the health and safety of personnel (40 CFR 241.211-1).</p>	<p>Verify that the health and safety of personnel are a consideration in the design, construction, and operation of the site.</p>
<p><b>7-37.</b> Specific health and safety procedures should be followed in order to protect personnel at land disposal sites (MP).</p>	<p>Verify that a safety manual is available to employees.</p> <p>Verify that personal safety devices, such as hearing and eye protection, are provided to facility employees.</p> <p>Verify that equipment is provided with safety devices.</p> <p>Verify that provisions to extinguish fires exist.</p> <p>Verify that communications equipment is available onsite.</p> <p>Verify that scavenging is prohibited.</p> <p>Verify that access to the site is controlled.</p> <p>Verify that traffic signs or markers are provided to promote an orderly traffic pattern to and from the discharge area.</p> <p>(NOTE: This MP is based on recommendations found in 40 CFR 241.211-2 and 241.211-3.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>7-38.</b> Operators of land disposal sites are required to maintain records and monitoring data to be provided, upon request, to the responsible agency (40 CFR 241.212-1).</p> <p><b>7-39.</b> Records being maintained at land disposal site should cover specific topics (MP).</p>	<p>Verify that required records are available.</p> <p>(NOTE: Recommended records and monitoring data include:</p> <ul style="list-style-type: none"> <li>- records of major operational problems, complaints, or difficulties</li> <li>- qualitative and quantitative evaluations of the environmental impact of the land disposal site</li> <li>- vector control efforts</li> <li>- dust and litter control efforts</li> <li>- quantitative measurements of the solid wastes handled</li> <li>- descriptions of the solid waste materials received, identified by source of materials.)</li> </ul> <p>Verify that records are maintained and cover at least:</p> <ul style="list-style-type: none"> <li>- major operational problems, complaints, or difficulties</li> <li>- results of leachate sampling and analyses</li> <li>- results of gas sampling and analyses</li> <li>- results of groundwater and surface water quality sampling and analyses upstream and downstream of the site</li> <li>- vector control efforts</li> <li>- dust and litter control efforts</li> <li>- quantitative measurements of the solid wastes handled</li> <li>- description of solid waste materials received.</li> </ul> <p>(NOTE: This MP is based on recommendations found in 40 CFR 241.212-3(a).)</p>



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**REGULATORY  
REQUIREMENTS:**

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**LAND DISPOSAL  
SITES OTHER THAN  
MSWLFs**

**Closure**

**7-40.** Upon closure of a site, a detailed description should be recorded with the area's land recording authority (MP).

Verify that, upon closure of a site, a detailed description is recorded with the area's land recording authority.

(NOTE: This MP is based on recommendations found in 40 CFR 241.212-3(b).)



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>SITE CRITERIA FOR NEW LANDFILLS OTHER THAN MSWLFs</b></p> <p><b>7-41.</b> Site selection and utilization are required to be consistent with public health and welfare, air and water quality standards, and adaptable to appropriate land-use plans (40 CFR 241.202-1).</p> <p><b>7-42.</b> New landfills should meet certain location and design criteria (MP).</p> <p><b>7-43.</b> Plans for the design, construction, and operation of new sites or modifications to existing sites are required to be prepared or approved by a professional engineer (40 CFR 241.203-1).</p>	<p>Verify that the site and utilization are consistent with public health and welfare and other necessary environmental standards.</p> <p>Verify that the hydrogeology of the site has been evaluated.</p> <p>Verify that onsite soil characteristics have been evaluated.</p> <p>Verify that environmental factors, climatological conditions, and socioeconomic factors have been considered in site selection.</p> <p>Verify that the site is easily accessible to vehicles.</p> <p>Verify that the site location will not attract birds and pose a hazard to low-flying aircraft.</p> <p>(NOTE: This MP is based on recommendations found in 40 CFR 241.202-2.)</p> <p>Verify that plans have been prepared or approved by a professional engineer.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>MEDICAL WASTE</b></p> <p><b>7-44.</b> Contaminated reusable sharps are required to be placed in containers which meet specific requirements as soon as possible after use until properly reprocessed (29 CFR 1910.1030(d)(2)(viii) and 1910.1030(d)(4)(ii) (E)).</p> <p><b>7-45.</b> Specimens of blood or other potentially infectious material are required to be placed in a container that prevents leakage during collection, handling, processing, storage, transport, or shipping, and specific labeling and handling requirements followed (29 CFR 1910.1030 (d)(2)(xiii)).</p> <p><b>7-46.</b> Contaminated sharps are to be discarded immediately in containers meeting specific requirements (29 CFR 1910.1030 (d)(4)(iii)(A)).</p>	<p>Verify that contaminated reusable sharps are placed in containers that are:</p> <ul style="list-style-type: none"> <li>- puncture resistant</li> <li>- labeled or color coded</li> <li>- leakproof on the sides and bottom.</li> </ul> <p>Verify that reusable sharps, that are contaminated with blood or other potentially infectious materials, are not stored or processed in a manner that required employees to reach by hand into the containers.</p> <p>Verify that containers are:</p> <ul style="list-style-type: none"> <li>- labeled and color coded</li> <li>- closed prior to being stored, transported, or shipped.</li> </ul> <p>(NOTE: When the facility utilizes Universal Precautions in the handling of all specimens, the labeling/color coding of specimens is not necessary if the containers are recognizable as containing specimens.)</p> <p>Verify that, if outside contamination of the primary container occurs, it is placed in a second container.</p> <p>Verify that, if the specimens could puncture the primary container, the primary container is placed in a secondary container which is puncture resistant.</p> <p>Verify that contaminated sharps are placed in containers that are:</p> <ul style="list-style-type: none"> <li>- closeable</li> <li>- puncture resistant</li> <li>- leakproof on sides and bottoms</li> <li>- labeled or color coded.</li> </ul> <p>Verify that during use, containers for contaminated sharps are:</p> <ul style="list-style-type: none"> <li>- easily accessible</li> <li>- maintained upright throughout use</li> <li>- replaced routinely and not be allowed to overfill.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
7-46. (continued)	<p>Verify that, when the containers of contaminated sharps are being moved from the area of use, the containers:</p> <ul style="list-style-type: none"> <li>- are closed</li> <li>- placed in a secondary container that is closeable if leakage is possible.</li> </ul> <p>Verify that reusable containers are not opened, emptied, or cleaned manually or handled in any other manner that would expose employees to risk of cuts or abrasions.</p> <p>(NOTE: Self-sheathing needles, after use, shall be disposed of in sharps containers.)</p>
<p>7-47. Regulated wastes other than sharps (see definitions) are required to be handled and placed in containers that meet specific standards (29 CFR 1910.1030(d)(4)(iii)(B)).</p>	<p>Verify that regulated wastes are placed in containers that:</p> <ul style="list-style-type: none"> <li>- are closeable</li> <li>- constructed to contain all contents and prevent leakage of fluids</li> <li>- labeled or color coded</li> <li>- closeable if leakage is possible</li> <li>- closed prior to removal.</li> </ul> <p>(NOTE: Regulated wastes which have been decontaminated need not be labeled or color-coded.)</p> <p>Verify that, if outside contamination of the regulated waste occurs, it is placed in a second container that meets the following:</p> <ul style="list-style-type: none"> <li>- are closeable</li> <li>- constructed to contain all contents and prevent leakage of fluids</li> <li>- labeled or color coded</li> <li>- closeable if leakage is possible.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>7-48.</b> All bins, pails, cans, and similar receptacles intended for reuse, that have the likelihood of becoming contaminated with blood or other potentially infectious materials are required to be inspected and decontaminated on a regularly scheduled basis (29 CFR 1910.1030(d)(4)(ii)(C)).</p> <p><b>7-49.</b> Labels affixed to containers of regulated wastes, refrigerators and freezers containing blood or other potentially infectious materials, and other containers used to store, transport, or ship blood or other potentially infectious materials must meet specific standards (29 CFR 1910.1030(g)(1)(i)).</p>	<p>Verify that receptacles with the potential for contamination are regularly inspected and decontaminated.</p> <p>Verify that the labels:</p> <ul style="list-style-type: none"> <li>- include the biohazard symbol</li> <li>- are fluorescent orange or orange-red or predominantly so, with lettering and symbols in contrasting color</li> <li>- are affixed as closely as possible to the container by adhesive, string, or wire, to prevent loss or removal.</li> </ul> <p>(NOTE: Red bags or containers may be used as a substitute for labels.)</p> <p>(NOTE: The following are exempt from labeling requirements:</p> <ul style="list-style-type: none"> <li>- containers of blood, blood components, or blood products that are labeled as to their contents and have been released for transfusion or other clinical use</li> <li>- individual containers of blood or other potentially infectious materials that is placed in a labeled container during storage, transport, shipment, or disposal.)</li> </ul> <p>(NOTE: Regulated waste that has been decontaminated need not be labeled and color coded.)</p>





## Appendix 7-1

### Open Dumping (40 CFR 257.1 through 257.3-8)

Unless the following are met, a land disposal site is considered an open dump.

1. Facilities or practices in floodplains shall not restrict the flow of the base flood, reduce the temporary water storage capacity of the floodplain, or result in washout of solid waste, so as to pose a hazard to human life, wildlife, or land or water resources.
2. Facilities or practices do not cause or contribute to the taking of any endangered or threatened species of plants, fish, or wildlife. Nor does it result in the destruction of or adverse modification of the critical habitat.
3. The facility does not cause a discharge of pollutants into the waters of the United States that is in violation of the requirements of the National Pollutant Discharge Elimination System (NPDES). It also does not cause a discharge of dredged materials or fill materials or cause nonpoint source pollution of waters of the United States that violated applicable legal requirements.
4. The facility or practice does not contaminate an underground drinking water source beyond the solid waste boundary or beyond a specified alternative boundary established by the state.
5. When solid waste is applied within 1 m (3 ft) of the surface of land used for the production of food chain crops the following are done:
  - a. the pH of the solid waste and soil mixture is 6.5 or greater at the time of each solid waste application, except for solid waste containing cadmium at concentrations of 2 mg/kg (dry weight) or less
  - b. the annual application of cadmium from solid waste does not exceed 0.5 kg/ha
  - c. the cumulative application of cadmium from solid wastes does not exceed:

Soil cation exchange capacity (meq/100g)	Maximum cumulative application (kg/ha)	
	Background soil pH less than 6.5	Background soil pH more than 6.5
Less than 5	5	5
5 to 15	5	10
More than 15	5	20

(continued)

## Appendix 7-1 (continued)

- d. when the background pH is less than 6.5, the cumulative application does not exceed the levels below provided the pH of the solid waste and soil mixture is adjusted to and maintained at 6.5 or greater whenever food-chain crops are grown:

Soil cation exchange capacity (meq/100g)	Maximum cumulative application (kg/ha)
less than 5	5
5 to 15	10
More than 15	20

6. When solid waste is applied within 1 m (3 ft) of the surface of land used for the production of animal feed the following are done:
- the pH of the solid waste and soil mixture is 6.5 or greater at the time of each solid waste application, or at the time the crop is planted, whichever occurs later, and the pH level is maintained whenever food chain crops are grown
  - there is a facility operating plan that demonstrates how human consumption will be avoided
  - future property owners are notified of the restrictions.
7. Solid waste containing concentrations of PCBs equal to or greater than 10 mg/kg (dry weight) is incorporated into the soil when applied to land used for producing animal feed, including pasture crops. Incorporation is not required if it is assured that the PCB content is less than 0.2 mg/kg (actual weight) in animal feed or less than 1.5 mg/kg (fat basis) in milk.
8. The onsite population of disease vectors is minimized through the periodic application of cover material or other techniques as appropriate so as to protect public health.
9. Sewage sludge that is applied or incorporated into the soil is treated by a process to significantly reduce pathogens prior to application or incorporation. Public access is controlled for at least 12 mo and grazing by animal whose product are consumed by humans is prevented for at least one month.
10. Septic tank pumpings that are applied or incorporated into the soil is treated by a process to significantly reduce pathogens prior to application or incorporation unless public access is controlled for at least 12 mo and grazing by animal whose products are consumed by humans is prevented for at least 1 mo.
- 11 There is no open burning of residential, commercial, institutional, or industrial solid waste. (This does not apply to the infrequent burning of agricultural wastes in the field, silvicultural wastes for forest management purposes, land clearing debris, diseased trees, and debris from emergency cleanup operations and ordnance.

(continued)

## Appendix 7-1 (continued)

12. The concentrations of explosive gases does not exceed:

- a. 25 percent of the LEL for the gases in the facility structures (excluding gas control or recovery system components)
- b. the LEL for the gases at the property boundary.

13. The site is not a fire hazard.

14. There is not uncontrolled public access.

15. Facilities or practices where putrescible wastes that may attract birds and which occurs within 10,000 ft (3048 m) of any airport runway used only by piston-type aircraft does not pose a bird hazard to aircraft.

(NOTE: These requirements do not apply to the following:

1. agricultural wastes, including manure and crop residues, returned to the soil as fertilizers or soil conditioners
2. overburden resulting from mining operations intended for return to the mining site
3. land application of domestic sewage or treated domestic sewage
4. location and operation of septic tanks
5. solid or dissolved materials in irrigation return flows
6. industrial discharges which are point sources subject to NPDES
7. source, special nuclear or by-product material as defined by the *Atomic Energy Act*
8. hazardous waste disposal facilities which are subject to regulation
9. disposal of solid waste by underground well injection
10. municipal solid waste landfill units
11. use or disposal of sewage sludge on the land when it is used or disposed of in accordance with 40 CFR 503.)



<b>FACILITY:</b>	<b>COMPLIANCE CATEGORY:</b> <b>SOLID WASTE MANAGEMENT</b> Fish and Wildlife Service	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> NA   C   RMA	<b>REVIEWER CHECKS:</b>		

**SECTION 8**  
**SPECIAL POLLUTANTS MANAGEMENT**

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**The contents of this section are the minimum requirements the auditor must review. The auditor must also review applicable state and local regulations.**

## SECTION 8

### SPECIAL POLLUTANTS MANAGEMENT

#### A. Applicability

This section is used to determine the compliance status of the management activities associated with:

1. polychlorinated biphenyls (PCBs) and in-service and out-of-service PCB items
2. the removal of asbestos from buildings and its ultimate disposal
3. testing for potential radon exposure
4. limiting environmental noise.

#### B. Federal Legislation

- *The Noise Control Act of 1972.* This act, Public Law (PL) 92-574 (42 U.S. Code (USC) 4901-4918), as amended:
  1. establishes a means for effective coordination of Federal research and activities in noise control
  2. authorizes the establishment of Federal noise emission standards for products distributed in commerce
  3. provides information to the public respecting the noise emission and noise reduction characteristics of such products.

The following categories of products which produce noise are covered by this act:

1. construction equipment
2. transportation equipment (including recreational vehicles and related equipment)
3. any motor or engine (including any equipment of which an engine or motor is an integral part)
4. electrical or electronic equipment.

The following articles are not covered by the act (42 USC 4902(3)):

1. any aircraft, aircraft engine, propeller, or appliance
2. any military weapons or equipment designed for combat use
3. any rockets or equipment designed for research, experimental, or developmental work to be performed by the National Aeronautics and Space Administration (NASA)
4. any other machinery or equipment designed for use in experimental work done by or for the Federal Government.

The manufacturer of a product is required to give notice to the prospective user about the level of the noise the product emits, or its effectiveness in reducing noise (42 USC 4907 (b)). Such notice may not be removed from the product or its container (42 USC 4909 (4)). The manufacturer is prohibited to remove or render ineffective any device or element of design incorporated into the product to control noise (42 USC 4909(2)).

- *Aviation Safety and Noise Abatement Act of 1979.* This act, PL 96-193 (49 USC Appendix 2103, 2104), as amended, relates to airport noise. Any airport operator may submit to the

Secretary of Transportation a noise exposure map. Such maps shall set forth the noncompatible uses in each area of the map, a description of the projected aircraft operations at such airport, and the ways in which such operations will affect such map (49 USC 2103). Any airport operator who has submitted a noise exposure map and the related information may submit to the Secretary of Transportation a noise compatibility program. This program shall include measures which the operator has taken or proposes for the reduction of existing noncompatible uses and the prevention of the introduction of noncompatible uses within the area covered by the noise exposure map submitted (49 USC Appendix 2104).

- *The Toxic Substances Control Act (TSCA)*. This act, as last amended in 1986, 15 USC 2601-2671, is the Federal legislation which deals with the control of toxic substances. The act consists of three subchapters, one of which regulates the control of toxic substances, another governs asbestos hazard emergency response, and another subchapter regulates indoor radon abatement. The policy developed in TSCA on chemical substances is as follows (15 USC 2601(b)):
  1. adequate data should be developed with respect to the effect of chemical substances and mixtures on health and the environment and that the development of such data should be the responsibility of those who manufacture and those who process such chemical substances and mixtures
  2. adequate authority should exist to regulate chemical substances and mixtures which present an unreasonable risk of injury to health or the environment, and to take action regarding chemical substances and mixtures
  3. authority over chemical substances and mixtures should be exercised in such a manner as not to impede unduly or create unnecessary economic barriers to technological innovation while fulfilling the primary purpose of this act to assure that such innovation and commerce in such chemical substances and mixtures do not present an unreasonable risk of injury to health or the environment.

Upon request by the U.S. Environmental Protection Agency (USEPA), each Federal department and agency is authorized to (15 USC 2625(a)):

1. make its services, personnel, and facilities available (with or without reimbursement) to the USEPA to assist the USEPA in the administration of this act
2. furnish the USEPA with information, data, estimates, and statistics, and allow the USEPA access to all information in its possession as the USEPA may reasonably determine to be necessary for the administration of this act.

Under TSCA, the national long-term goal of the United States with respect to radon levels in building is that the air within buildings in the United States should be as free of radon as the ambient air outside of buildings (15 USC 2661). The head of each Federal Department or agency that owns a Federal building must conduct a study for the purpose of determining the extent of radon contamination in such buildings. Such study must include, in the case of a Federal building using a nonpublic water source (such as a well or other groundwater), radon contamination of the water. Such a study must be based on design criteria specified by the USEPA (15 USC 2669(a)(c)(e)).

A recent Amendment of TSCA requires the creation of regulations governing lead-based paint activities to ensure that individuals engaged in such activities are properly trained; that training programs are accredited; and that contractors engaged in such activities are certified. As of the publication of this manual, these regulations have not been finalized (15 USC 2681 through 2692).



- *The Asbestos Hazard Emergency Response Act (AHERA)* of 1986. This act, last amended in November 1990, 15 USC 2641-2656, et. al., and 20 USC 4014, et. al., is the Federal legislation which governs the control and abatement of asbestos hazard present in school buildings. The purpose of this act is (15 USC 2641(b)):
  1. to provide for the establishment of Federal regulations which require inspection for ACM and implementation of appropriate response actions with respect to ACM in the Nation's schools in a safe and complete manner
  2. to mandate safe and complete periodic reinspection of school buildings following response actions, where appropriate
  3. to require the USEPA to conduct a study to find out the extent of the danger to human health posed by asbestos in public and commercial buildings and the means to respond to any such danger.
- *The Hazardous Materials Transportation Act.* This act was amended in 1978 to regulate the transport of asbestos materials. The regulations are contained in 49 CFR 172-177. In particular, 49 CFR 177 requires that asbestos must be loaded, handled, and unloaded in a manner that will minimize occupational exposure to airborne asbestos. Asbestos wastes which are transported for disposal at a landfills or other disposal facilities must meet all applicable requirements.
- Executive Order (EO) 12088. This EO, *Federal Compliance with Pollution Standards*, of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities it funds meet applicable Federal, state, and local environmental requirements or to correct situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.
- Federal regulations used to develop the checklist include:
  - EO 12088, *Federal Compliance with Pollution Control Standards*.
  - 40 CFR 61, Subpart M, *National Emission Standards for Hazardous Air Pollutants*.
  - 40 CFR 761, *PCB Manufacturing, Processing, Distribution in Commerce and Use Prohibitions*.
  - 40 CFR 763, *Asbestos-in-Schools*.

### C. State/Local Regulations

- *Noise* - State, regional, and local governmental agencies may develop zoning and planning ordinances which have the potential to effect FWS facilities and their operations. As a general rule, states tend to treat environmental noise as a source specific pollutant whose emissions will be controlled by the locally effected community.
- *PCBs* - According to the general structure of Federal regulatory programs, any state regulations must adopt the Federal regulations as a minimum set of requirements. In some cases, state regulations have been developed which regulate PCBs more stringently than the Federal program.

State PCB regulations may provide additional regulatory requirements beyond the Federal program to address a specific concern or activity sensitive in that state. State regulations may supersede the Federal regulations in areas including the following:

1. PCBs may be regulated as a hazardous waste
  2. PCBs may be regulated to a lower concentration. For example, regulated PCBs in one state are defined to be materials and fluids which contain PCBs at a concentration greater than 7 ppm
  3. shipments of PCBs may require manifest documents
  4. analysis may be required to quantify the PCB concentration in all PCB Items
  5. additional inspections of select PCB Items and specific disposal requirements for PCBs and PCB Items may also be required
  6. generators of PCBs and PCB Items may be required to obtain disposal permits.
- *Asbestos* - Many state and local governments have enacted standards more stringent than the Federal requirements concerning certification of asbestos workers and disposal of asbestos waste. If the facility is engaging in asbestos removal or disposal, contact the appropriate state and local agencies.
  - *Radon* - State and local governments may enact radon control standards.

#### D. FWS/DOI Manuals

- 561 FW 8, *Compliance Requirements TSCA/CAA - Asbestos*. This chapter, dated 12 June 1995, provides guidance for asbestos management at Service facilities.
- 485 DM 27, *Safety and Health Handbook*. This handbook, dated 13 July 1993 establishes a Departmental radon program to identify and control potential health hazards due to elevated levels of radon.

#### E. Key Compliance Requirements

- **Personnel and PCBs** - Certain regulations and practices should be followed to ensure the health of personnel who come in contact with PCBs. These include provision of protective work-clothing, shower facilities, and facilities for washing hands during shift. Airborne contaminations of PCBs should be audited and certain precautionary practices followed to protect personnel, which include the wearing of respirators if contamination is above a certain level. Certain records and practices should be maintained for employees exposed to PCBs, including medical histories and physical examinations emphasizing liver and skin condition.
- **PCB Equipment Marking** - The following equipment is required to be marked indicating that they contain PCBs (40 CFR 761.40 and 761.45):
  1. PCB Containers with PCBs in concentrations of greater than 50 ppm
  2. PCB Transformers (500 ppm or greater)
  3. PCB Large, High-Voltage Capacitors
  4. equipment containing a PCB Transformer (500 ppm or greater) or a PCB Large, High-Voltage Capacitor at the time of removal from service
  5. PCB Large, Low-Voltage Capacitors at the time of removal from service

6. electric motors using PCB coolants with a concentration of greater than 50 ppm
  7. hydraulic systems using PCB hydraulic fluid with concentrations of greater than 50 ppm
  8. heat transfer systems (other than PCB Transformers) using PCB concentrations of greater than 50 ppm
  9. PCB Article Containers containing any of the above
  10. each storage area used to store PCBs and PCB Items for disposal
  11. transport vehicles loaded with PCB Containers that contain more than 45 kg (99.4 lb) of PCBs in the liquid phase with PCB concentrations of greater than 50 ppm or one or more PCB Transformers with PCB concentrations of greater than 500 ppm: mark on each end and side
  12. vault doors, machinery room doors, fences, hallways, or means of access, other than a manhole or grate cover, to a PCB Transformer (500 ppm or greater).
- Records for PCBs - A written annual document log must be prepared by 1 July of each calendar year, covering the previous year for all facilities that use or store at any time at least 45 kg (99.4 lb) of PCBs contained in PCB Containers, or one or more PCB Transformers.

Owners and operators of PCB chemical waste landfills shall keep records on water analysis and operational records, including burial coordinates for 20 yr after disposal has ceased. Generators of PCBs shall maintain manifests and certificates of disposal (COD) for 3 yr (40 CFR 761.180(a), 761.180(d), and 761.180(f)).

- PCB Transformers - PCB Transformers with PCBs of 500 ppm or greater that are in use or in storage for reuse, must not pose an exposure risk to food and feed and are subject to registration requirements. Combustible materials, including, but not limited to, paints, solvents, plastics, paper, and sawn wood, must not be stored by a PCB Transformer. PCB transformers are required to be properly serviced, and inspections must be performed once every 3 mo for all in-service transformers. If the transformer is found to be leaking, it must be repaired or replaced to eliminate the source of the leak. When a PCB transformer is involved in a fire, the facility is required to immediately report the incident to the National Response Center (NRC) (40 CFR 761.30(a)(1)(vi) through 761.30(a)(1)(xi)).
- PCB Spills - Facilities are required to report spills of 10 lb [4.56 kg] or more by weight of PCBs of concentrations of 50 ppm to the USEPA regional office. Spills of greater than 1 lb [0.45 kg] or more by weight of PCBs must be cleaned up and reported to the NRC. The criteria for cleanup is based on whether the spill is of high or low concentration of PCBs (40 CFR 761.120, 761.123, and 761.125).
- PCB Items - The use of PCBs in electromagnetic switches, voltage regulators, capacitors, heat transfer and hydraulic systems, circuit breakers, reclosers, and cable is allowed if applicable restrictions are met and precautions taken (40 CFR 761.30).
- PCB Storage - PCBs and PCB Items at concentrations greater than 50 ppm that are to be stored before disposal must be stored in a facility that: assures the containment of PCBs, prevents rainfall from contacting PCBs and PCB Items; has a 6 in. [15.24 cm] curb, and is correctly labeled. Storage prior to disposal is not to exceed 1 yr. Nonleaking and structurally undamaged PCB Large, High-Voltage Capacitors and PCB-contaminated Electric Equipment that have not been drained of freeflowing dielectric fluid may be stored on pallets next to a storage area that complies with the storage area requirements if they are

checked weekly. Containers used for the storage of PCBs must comply with the shipping container specification of the Department of Transportation (DOT) (40 CFR 761.65).

- **PCB Transportation** - A generator who offers a PCB Waste for transport to commercial off-site storage or offsite disposal must prepare a manifest. If the generator does not receive a signed copy of the manifest within 35 days from the date the waste was accepted by the initial transporter, the generator must immediately contact the transporter and/or owner or operator of the designated facility to determine the status of the PCB Waste (40 CFR 761.207 through 761.210 and 761.215).
- **PCB Disposal** - For each shipment of manifested PCB Waste that a disposal facility accepts, the owner or operator of the disposal facility must prepare a Certificate of Disposal (COD). PCB-contaminated fluids of concentrations greater than 50 ppm, but less than 500 ppm, are required to be disposed of in a USEPA approved incinerator, or chemical waste landfill, or a high efficiency boiler. PCB liquids and Transformers with concentrations of 500 ppm or greater must be disposed of in a USEPA approved PCB incinerator. PCB Capacitors must be disposed of in either a solid waste landfill (nonleaking Small PCB Capacitor only) or an approved incinerator. PCB hydraulic machines containing PCBs at concentrations greater than 50 ppm may be disposed of as municipal solid waste when drained. PCB-contaminated Electrical Equipment, except capacitors, shall be disposed of by draining off the free-flowing liquid. PCB Articles and Containers shall be disposed of in a USEPA approved incinerator or chemical waste landfill if all free-flowing liquids have been removed (40 CFR 761.60, 761.218).
- **Asbestos Identification** - Facility buildings with the potential to be contaminated with asbestos should be tested and surveyed for asbestos and friable materials (MP).
- **Renovation and Demolition of Asbestos-Containing Structures** - Facilities that demolish structures containing asbestos above certain limits, must meet notification requirements, emission control requirements and wetting requirements. This applies to facilities that demolish structures containing at least 80 linear m (260 linear ft) of RACM on pipes, or at least 15 m<sup>2</sup> (160 ft<sup>2</sup>) of RACM on other components or at least 1 m<sup>3</sup> (35 ft<sup>3</sup>) off facility components, and facilities renovating structures and stripping or removing at least 80 linear m (260 linear ft) of RACM on pipes, or at least 15 m<sup>2</sup> (160 ft<sup>2</sup>) of friable asbestos on other facility components and at least 1 m<sup>3</sup> (35 ft<sup>3</sup>) off facility components. If the concentration of asbestos is less than this level, then the facility must submit notification of demolition. Facilities being demolished under state or local governmental agency orders shall have the portion of the facility containing friable asbestos adequately wetted during the wrecking operation. When a facility is demolished by intentional burning, all regulated asbestos-containing materials (RACM) must be removed. No RACM shall be stripped, removed, or otherwise handled or distributed unless at least one onsite representative trained in asbestos removal is present. When air cleaning is used as a method of controlling emissions of asbestos to the outside air, the fabric filter collection systems are required to meet specific standards, unless alternative equipment is authorized for use by the USEPA (40 CFR 61.145 and 61.152).
- **Asbestos Disposal** - Asbestos-containing waste must be wetted or bagged to prevent emissions to the air. Asbestos waste has to be disposed of in landfills that have been approved for the acceptance of asbestos-containing waste (40 CFR 61.150, 61.151, and 61.154).

- Environmental Noise - Making continuous or excessive noise at any time or any place by any means is prohibited when it interferes with an authorized use or project purpose. A single facility point of contact should be identified for noise complaints (MP).

- Radon

#### MITIGATION TIME FRAME

Radon Level (pCi/L) <sup>4</sup>	Mitigate
Greater than 200 <sup>1</sup>	1 mo or move the occupants
200-20 <sup>1</sup>	6 mo
20-8 <sup>2</sup>	1-4 yr <sup>3</sup>
8-4 <sup>2</sup>	5 yr
4 or less <sup>1</sup>	No action required

- <sup>1</sup> Determine by 90-day screen or a 1-yr measurement in the case of Priority 2 and 3 structures.
- <sup>2</sup> Annual average determined by 1-yr measurement. Screening measurements in this range will not be used as the basis for initiating mitigation actions.
- <sup>3</sup> Depending on the level of the measurement.
- <sup>4</sup> pCi = picoCurie; L = liters; mo = months.

- Recordkeeping - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

#### F. Key Compliance Definitions

- *Active Waste Disposal Site* - any disposal site other than an inactive site (40 CFR 61.14).
- *Adequately Wetted* - sufficiently mixed or penetrated with liquid to prevent the release of particulates (40 CFR 61.14).
- *Asbestos* - substances comprised of or derived from actinolite, amosite, anthophyllite, chrysotile, crocidolite, or tremolite (40 CFR 61.14).
- *Asbestos-Containing Waste Materials* - means mill tailings or any waste that contains commercial asbestos and is generated by a source subject to the provisions of 40 CFR 141. This term also includes filters from control devices, friable asbestos waste material, and bags or other similar packaging contaminated with commercial asbestos. However, as applied to demolition and renovation operations, this term includes regulated ACM waste and materials contaminated with asbestos including disposable equipment and clothing (40 CFR 61.141).
- *Asbestos Material* - asbestos or any material containing asbestos (40 CFR 61.141).

- *Asbestos Waste from Control Devices* - any waste material that contains asbestos and is collected by a pollution control device (40 CFR 61.141).
- *Capacitor* - a device for accumulating and holding a charge of electricity and consisting of conducting surfaces separated by a dielectric. Types of capacitors are as follows (40 CFR 761.3):
  1. *Small Capacitor* - a capacitor which contains less than 1.36 kg (3 lb) of dielectric fluid
  2. *Large, High-Voltage Capacitor* - a capacitor which contains 1.36 kg (3 lb) or more of dielectric fluid and which operates at 2000 V (a.c. or d.c.) or above
  3. *Large, Low-Voltage Capacitor* - a capacitor which contains 1.36 kg (3 lb) or more of dielectric fluid and which operates at 2000 V (a.c. or d.c.).
- *Category I Nonfriable Asbestos-Containing Material (ACM)* - asbestos-containing packing, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos (40 CFR 61.141).
- *Category II Nonfriable ACM* - any material including Category I nonfriable ACM containing more than 1 percent asbestos that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure (40 CFR 61.141).
- *Chemical Waste Landfill* - landfill at which protection against risk of injury to health or the environment from mitigation of PCBs to land, water, or the atmosphere is provided from PCBs and PCB items deposited therein by locating engineering, and operations, the landfill as required (40 CFR 761.3).
- *Commercial Asbestos* - any material containing asbestos that is extracted from ore and has value because of its asbestos content (40 CFR 61.141).
- *Commercial Storer of PCB Waste* - the owner or operator of each facility that is subject to the PCB storage facility standards of 40 CFR 761.65, and who engages in storage activities involving PCB Waste generated by others, or PCB Waste that was removed while servicing the equipment owned by others and brokered for disposal. The receipt of a fee or any other forms of compensation for services is not necessary to qualify as a commercial storer of PCB Waste. It is sufficient under this definition that the facility stores PCB Waste generated by others or the facility removed the PCB Waste while servicing equipment owned by others. If a facility's storage of PCB Waste at no time exceeds 500 gal [1892.71 L] of PCBs, the owner or operator is not required to seek approval as a commercial storer of PCB Waste (40 CFR 761.3).
- *Cutting* - to penetrate with a sharp-edged instrument and includes sawing, but does not include shearing, slicing, or punching (40 CFR 61.141).
- *dBA* - sound level in decibels, measured using the A-weighting network of a sound level meter.
- *dB(C)* - a sound level in decibels, measured using the C-weighting network of a sound level meter.

- *Decibel (dB)* - sound is measured in decibels. The zero on the decibel scale is based on the lowest sound level that a healthy, unimpaired human ear can hear. Decibels are not linear, but representative points on a sharply rising (exponential) curve.
- *Demolition* - the wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of a facility (40 CFR 61.141).
- *Disposal* - intentionally or accidentally to discard, throw away, or otherwise complete or terminate the useful life of PCBs and PCB Items (40 CFR 761.3).
- *Double Wash/Rinse* - a minimum requirement to cleanse solid surfaces (both impervious and nonimpervious) two times with an appropriate solvent or other material in which PCBs are at least 5 percent soluble (by weight) (40 CFR 761.123).
- *Emergency Renovation Operation* - a renovation operation that was not planned but results from a sudden, unexpected event that, if not immediately attended to, presents a safety or public health hazard, is necessary to protect equipment from damage or is necessary to avoid imposing an unreasonable financial burden. This term includes operations necessitated by nonroutine failures of equipment (40 CFR 61.141).
- *Emergency Situations* - for continuing use of a PCB Transformer exists when (40 CFR 761.3):
  1. neither a non-PCB Transformer nor a non-PCB-contaminated transformer is currently in storage for reuse or readily available within 24 h for installation
  2. immediate replacement is necessary to continue service for power users.
- *Facility Component* - any part of any facility, including equipment (40 CFR 61.141).
- *Friable Asbestos Material* - any material that contains more than 1 percent asbestos by weight and can be crumbled, pulverized, or reduced to powder, when dry, by hand pressure (40 CFR 61.141).
- *Fugitive Source* - any source of emissions not controlled by an air pollution control device (40 CFR 61.141).
- *Glove Bag* - a sealed compartment with attached inner gloves used for the handling of ACM (40 CFR 61.141).
- *High Concentration PCBs* - PCBs that contain 500 ppm or greater PCBs, or those materials which the USEPA requires to be assumed to contain 500 ppm or greater PCBs in the absence of testing (40 CFR 761.123).
- *In or Near Commercial Buildings* - within the interior of, on the roof of, attached to the exterior wall of, in the parking area serving, or within 30 m of a nonindustrial, nonsubstation building (40 CFR 761.3).
- *In Poor Condition* - the binding of the materials is losing its integrity as indicated by peeling, cracking, or crumbling of the material (40 CFR 61.141).

- *Inactive Waste Disposal Site* - any disposal site or portion of it where additional asbestos-containing waste material will not be deposited and where the surface is not disturbed by vehicular traffic (40 CFR 61.141).
- *Industrial Building* - a building directly used in manufacturing or technically productive enterprises (40 CFR 761.3).
- *Leak or Leaking* - any instance in which a PCB Article, PCB Container, or PCB Equipment has any PCBs on any portion of its external surface (40 CFR 761.3).
- *Low Concentration PCBs* - PCBs that are tested and found to contain less than 500 ppm PCBs or those PCB-containing materials which USEPA requires to be assumed to be at concentrations below 500 ppm (i.e., untested mineral oil dielectric fluid) (40 CFR 761.123).
- *Management Practice (MP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- *Mark* - the descriptive name, instructions, cautions, or other information applied to PCBs and PCB Items, or other objects subject to these regulations (40 CFR 761.3).
- *Marking* - the marking of PCB Items and PCB storage areas and transport vehicles by means of applying a legible mark by painting, fixation of an adhesive label, or by any other method that meets the requirements of these regulations (40 CFR 761.3).
- *Mineral Oil PCB Transformers* - any transformer originally designed to contain mineral oil as the dielectric fluid and which has been tested and found to contain 500 ppm or greater PCBs (40 CFR 761.3).
- *Non-PCB Transformers* - any transformer that contains less than 50 ppm PCB except that any transformer that has been converted from a PCB Transformer or a PCB-contaminated transformer cannot be classified as a non-PCB Transformer until reclassification has occurred in accordance with the requirements of 40 CFR 761.30(a)(2)(v) (40 CFR 761.3).
- *Nonscheduled Renovation* - a renovation operation necessitated by the routine failure of equipment, which is expected to occur within a given period based on past operating experience, but for which an exact date cannot be predicted (40 CFR 61.141).
- *Outside Air* - the air outside buildings and structures, including but not limited to, air under a bridge or an open ferry dock (40 CFR 61.141).
- *PCB or PCBs* - a chemical substance that is limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances which contains such substance (40 CFR 761.3).
- *PCB Article* - any manufactured article, other than a PCB Container, that contains PCBs and whose surface(s) has been in direct contact with PCBs. This includes capacitors, transformers, electric motors, pumps, and pipes (40 CFR 761.3).



- *PCB Article Container* - any package, can, bottle, bag, barrel, drum, tank, or other device used to contain PCB Articles or PCB Equipment, and whose surface(s) has not been in direct contact with PCBs (40 CFR 761.3).
- *PCB-Contaminated Electrical Equipment* - any electrical equipment, including but not limited to transformers, capacitors, circuit breakers, reclosers, voltage, regulators, switches, electromagnets, and cable, that contain 50 ppm or greater PCB, but less than 500 ppm PCB (40 CFR 761.3).
- *PCB Equipment* - any manufactured item, other than a PCB Container or a PCB Article container, which contains a PCB Article or other PCB Equipment, and includes microwave ovens, electronic equipment, and fluorescent light ballasts and fixtures (40 CFR 761.3).
- *PCB Item* - any PCB Article, PCB Article Container, PCB Container, or PCB Equipment, that deliberately or unintentionally contains or has as a part of it any PCB or PCBs (40 CFR 761.3).
- *PCB Transformer* - any transformer that contains 500 ppm PCB or greater (40 CFR 761.3).
- *PCB Waste* - those PCBs and PCB Items that are subject to the disposal requirements of Subpart D of 761 (40 CFR 761.3).
- *Particulate Asbestos Material* - finely divided particles of asbestos or material containing asbestos (40 CFR 61.141).
- *Planned Renovation Operations* - a renovation operation, or a number of such operations, in which the amount of friable asbestos material that will be removed or stripped within a given period of time can be predicted. Individual nonscheduled operations are included if a number of such operations can be predicted to occur during a given period of time based on operating experience (40 CFR 61.141).
- *Posing an Exposure Risk to Food or Feed* - being in any location where human food or animal feed products could be exposed to PCBs released from a PCB Item (40 CFR 761.3).
- *Radon-222* - a naturally occurring, inert, radioactive gas that is formed from the radioactive decay of uranium.
- *Regulated Asbestos-Containing Material (RACM)* - includes friable asbestos material; Category I nonfriable ACM that has become friable; Category I nonfriable ACM that has been subjected to grinding, casting, cutting, or abrading; and Category II nonfriable ACM that has a high probability of becoming crumbled, crushed, or pulverized (40 CFR 61.141).
- *Remove* - to take out RACM from any structure (40 CFR 61.141).
- *Renovation* - altering in any way one or more structure components. Operations in which load-supporting structural members are wrecked or taken out are excluded (40 CFR 61.141).
- *Retrofill* - to remove PCB or PCB-contaminated dielectric fluid and replace it with either PCB, PCB-contaminated, or non-PCB dielectric fluid (40 CFR 761.3).

- *Rupture of a PCB Transformer* - a violent or nonviolent break in the integrity of a PCB Transformer caused by an overtemperature and/or overpressure condition that results in the release of PCBs (40 CFR 761.3).
- *Strip* - to take off RACM from any part of a facility (40 CFR 61.141).
- *Structural Member* - any load-supporting member of a structure, such as beams and load-supporting walls; or any nonload-supporting member, such as ceilings and nonload-supporting walls (40 CFR 61.141).
- *Visible Emissions* - any emissions which are visually detectable without the aid of instruments, coming from RACM or asbestos-containing waste material, or from any asbestos milling, manufacturing, or fabricating operation. This does not include condensed water vapor (40 CFR 61.141).

## **SPECIAL POLLUTANTS MANAGEMENT**

### **GUIDANCE FOR CHECKLIST USERS**

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	<b>REFER TO CHECKLIST ITEMS:</b>	<b>REFER TO PAGE NUMBER:</b>
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PCB Transformers	8-14 through 8-23	8-25
PCB Spills	8-24 through 8-26	8-31
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Renovation and Demolition of Asbestos-Containing Structures	8-53 through 8-61	8-53
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Radon Gas	8-68 through 8-70	8-65
Environmental Noise	8-71	8-67

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## **SPECIAL POLLUTANTS MANAGEMENT**

### **Records To Review**

- Inspection, storage, maintenance, and disposal records for PCBs or PCB Items
- PCB Equipment inventory and sampling results
- CODs and manifests
- Correspondence with regulatory agencies concerning PCB noncompliance situations
- Annual documentation logs
- Asbestos management plan and operating plan
- Notifications to Regulators concerning asbestos disposal
- Records of onsite disposal and transportation and offsite disposal of asbestos
- Regulatory inspection reports
- Documentation of asbestos sampling and analytical results
- Documentation of preventive measure or action
- Results of air sampling at the conclusion of response action
- Records of asbestos training program
- List of buildings insulated with asbestos or housing ACM
- Record of demolition or renovation projects completed in the past 5 yr that involve friable asbestos
- Decision documents and records of decision
- Noise complaint log

### **Physical Features To Inspect**

- PCB storage areas
- Transformers
- Equipment, fluid, and other items at the facility containing PCBs
- Pipe, spray-on, duct, and troweled cementitious insulation and boiler lagging
- Ceiling and floor tiles
- Piping at hatcheries
- Power generating or other noise
- Emergency generators



**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>ALL FACILITIES</b></p> <p><b>8-1.</b> The current status of any ongoing or unresolved consent orders, compliance agreements, notices of violation (NOVs), inter-agency agreements, or equivalent state enforcement actions is required to be examined (a finding under this checklist item will have the enforcement action/identifying information as the citation).</p> <p><b>8-2.</b> FWS facilities are required to comply with state and local regulations (EO 12088, Section 1-1).</p> <p><b>8-3.</b> Facilities will meet regulatory requirements issued since the finalization of the handbook (a finding under this checklist item will have the citation of the new regulation as a basis of finding).</p>	<p>Determine if noncompliance issues have been resolved by reviewing a copy of the previous report, consent orders, compliance agreements, NOVs, inter-agency agreements, or equivalent state enforcement actions.</p> <p>Verify that the facility is complying with state and local requirements.</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies.</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- definitions of PCB-contaminated</li> <li>- PCB storage, labeling, and disposal requirements</li> <li>- certification of individuals sampling and/or working with asbestos</li> <li>- renovation and demolition procedures</li> <li>- asbestos handling and disposal procedures</li> <li>- motor vehicle noise</li> <li>- construction noise</li> <li>- noise from shooting and firing ranges.)</li> </ul> <p>Determine if any new regulations concerning PCBs, asbestos, and radon have been issued since the finalization of the handbook.</p> <p>Verify that the facility is in compliance with newly issued regulations.</p>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**8-4.** FWS facilities should report all NOV's to the Region and the Service Pollution Control Office (SPCO) (MP).

**REVIEWER CHECKS:  
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Determine if the facility has received an NOV relating to air quality.  
  
Verify that the NOV was reported to the Region and the SPCO.



COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS: July 1995
<b>PCBs</b>	
<b>General</b>	
8-5. Certain regulations and practices should be followed to ensure the health of personnel who come in contact with PCBs (MP).	<p>Verify that personnel are instructed to practice the following:</p> <ul style="list-style-type: none"> <li>- wash hands and exposed skin during work shift before:               <ul style="list-style-type: none"> <li>- eating</li> <li>- drinking</li> <li>- smoking</li> <li>- using toilet facilities</li> </ul> </li> <li>- shower thoroughly before changing into street clothes.</li> </ul> <p>Verify that protective clothing is provided and worn when working with PCBs:</p> <ul style="list-style-type: none"> <li>- gloves</li> <li>- boots</li> <li>- overshoes</li> <li>- coveralls</li> <li>- safety glasses</li> <li>- face shields.</li> </ul>
8-6. Airborne contamination of PCBs should be assessed and certain precautionary practices to protect personnel must be followed (MP).	<p>Determine if measurements are made of air in the workplace to determine if airborne PCB contamination is present.</p> <p>Verify that, if the contamination level is at or above 0.5 mg PCB/m<sup>3</sup>, the following is done:</p> <ul style="list-style-type: none"> <li>- respirators are worn by all personnel</li> <li>- nondisposable equipment and clothing are thoroughly washed before being stored for reuse.</li> </ul>
8-7. Certain records and practices should be enacted for employees exposed to PCBs (MP).	<p>Verify that employees with potential exposure to PCBs are given medical examinations that include:</p> <ul style="list-style-type: none"> <li>- medical history</li> <li>- physical examination emphasizing liver function and skin condition.</li> </ul> <p>Verify that the liver function tests include:</p> <ul style="list-style-type: none"> <li>- serum glutamic oxaloacetic transaminase (SGOT)</li> <li>- serum glutamic pyruvic transaminase (SGPT)</li> <li>- gamma glutamyl transpeptidase (GGTP).</li> </ul>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:  
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**8-7. (continued)**

Verify that, if respirators are used, each employee is checked annually for ability to work using such equipment.

Verify that records and results of medical examinations are maintained for at least 40 yr after the termination of employment.

**8-8.** Facilities that use or store at any time at least 45 kg (99.4 lb) of PCBs contained in PCB Containers or one or more PCB Transformers (500 ppm or greater), or 50 or more PCB Large, High-, or Low-Voltage Capacitors are required to keep an inventory (40 CFR 761.180(a)(2)(iii) through 761.180(a)(2)(vi)).

Determine if the facility uses or stores at any time at least 45 kg (99.4 lb) of PCBs contained in PCB Containers or one or more PCB Transformers (500 ppm or greater), or 50 or more PCB Large, High, or Low Voltage Capacitors.

Verify that the facility has an inventory/record of the following:

- total number (by type) of PCB Articles, PCB Article Containers, and PCB Containers placed into storage for disposal or disposed of during the calendar year
- total weight placed into storage for disposal or disposed of during the calendar year of:
  - PCBs in PCB Articles
  - contents of PCB Article Container
  - contents of PCB Containers
  - bulk PCB Waste
- a list of PCBs and PCB Items remaining in-service at the end of the calendar year. The total weight of any PCBs and PCB Items in containers including identification of container contents and the total number of PCB Transformers, PCB Large, High- and Low-Voltage Capacitors, and the total weight of PCBs in PCB Transformers.

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>8-9.</b> Storage rooms and certain equipment that contains PCBs must be marked with an M<sub>L</sub> marking (40 CFR 761.40, 761.45, and 761.65(c)(3)).</p>	<p>(NOTE: Marking format: Large PCB Mark (M<sub>L</sub>) letters and striping, on a white or yellow background, sufficiently durable to equal or exceed the life of the PCB Article. The size shall be 15.25 cm (6 in.) on each side. If the article is too small to accommodate this size, a smaller label (M<sub>S</sub>) may be used.)</p> <p>Verify that equipment containing PCBs is marked with an M<sub>L</sub> marking that can be easily read by any person inspecting or servicing the equipment (see Appendix 8-1 for a sample of the marking):</p> <ul style="list-style-type: none"> <li>- PCB Containers with PCBs in concentrations of greater than 50 ppm</li> <li>- PCB Transformers (500 ppm or greater)</li> <li>- PCB Large High-Voltage Capacitors</li> <li>- equipment containing a PCB Transformer (500 ppm or greater) or a PCB Large High-Voltage Capacitor at the time of removal from service</li> <li>- PCB Large Low-Voltage Capacitors at the time of removal from service</li> <li>- electric motors using PCB coolants with a concentration of greater than 50 ppm</li> <li>- hydraulic systems using PCB hydraulic fluid with concentrations of greater than 50 ppm</li> <li>- heat transfer systems (other than PCB Transformers) using PCB concentrations of greater than 50 ppm</li> <li>- PCB Article Containers containing any of the above</li> <li>- each storage area used to store PCBs and PCB Items for disposal</li> <li>- transport vehicles loaded with PCB Containers that contain more than 45 kg (99.4 lb) of PCBs in the liquid phase with PCB concentrations of greater than 50 ppm or one or more PCB Transformers with PCB concentrations of greater than 500 ppm are marked on each end and side</li> <li>- vault doors, machinery room doors, fences, hallways, or means of access, other than a manhole or grate cover, to a PCB Transformer (500 ppm or greater).</li> </ul> <p>Verify that if one or more PCB Large High-Voltage Capacitors is installed in a protected location such as a pole, structure, or behind a fence, the pole, structure, or fence is marked and a record or procedure identifying the PCB Capacitor is maintained by the facility.</p> <p>(NOTE: Marking of PCB-contaminated Electrical Equipment (50 to 500 ppm) is not required.)</p> <p>Verify that PCB storage rooms are marked.</p> <p>(NOTE: Appendix 8-2 contains a list of manufacturers that produced PCB-contaminated dielectric fluid.)</p>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>8-10.</b> Generators, transporters, and disposers of PCB Waste are required to have an USEPA identification number (40 CFR 761.202 through 761.205).</p>	<p>(NOTE: Some facilities are exempt from the notification requirement and do not have a specified PCB storage area as regulated by 40 CFR 761.65 and just temporarily store before they transport for disposal.)</p> <p>Determine if the facility is a generator, transporter, or disposer of PCB Waste.</p> <p>Verify that facilities which generate PCB Waste have a USEPA identification number before processing, storing, dispensing, transporting, or offering for transport PCB Waste.</p> <p>Verify that facilities which transport or disposed of PCB Waste have a USEPA identification number.</p> <p>Verify that, if a facility must file, Form 7710-53, <i>Notification of PCB Waste Activity</i>, was filed with USEPA by 4 April 1990 and a USEPA identification number was obtained.</p>

**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>PCB RECORDS</b></p> <p><b>8-11.</b> A written annual document log must be prepared by 1 July of each calendar year, covering the previous year for all facilities that use or store at any time at least 45 kg (99.4 lb) of PCBs contained in PCB Containers or one or more PCB Transformers (500 ppm or greater), or 50 or more PCB Large, High-, or Low-Voltage Capacitors (40 CFR 761.180 (a)).</p>	<p>Verify that the annual document log and annual records (manifests certificates of disposal) are kept for at least 3 yr after the facility stops using or storing PCBs and PCB Items in the listed quantities.</p> <p>Review the written annual document log for the following:</p> <ul style="list-style-type: none"> <li>- identification of facility</li> <li>- calendar year covered</li> <li>- manifest number for every manifest generated</li> <li>- total number (by type) of PCB Articles, PCB Article Containers, and PCB Containers placed into storage for disposal or disposed of during the calendar year</li> <li>- total weight placed into storage for disposal or disposed of during the calendar year of: <ul style="list-style-type: none"> <li>- PCBs in PCB Articles</li> <li>- contents of PCB Article Container</li> <li>- contents of PCB Containers</li> <li>- bulk PCB Waste</li> </ul> </li> <li>- a list of PCBs and PCB Items remaining in-service at the end of the calendar year. The total weight of any PCBs and PCB Items in containers including identification of container contents and the total number of PCB Transformers, PCB Large, High- and Low-Voltage Capacitors, and the total weight of PCBs in PCB Transformers</li> <li>- a record of each telephone call or other form of verification to confirm the receipt of PCB Waste transported by independent transport.</li> </ul> <p>Verify that the annual document log contains the following for each manifest, for unmanifested waste, and for any PCBs or PCB Items received from or shipped from another facility owned or operated by the generator:</p> <ul style="list-style-type: none"> <li>- date removed from service for disposal (first date material placed in PCB Container)</li> <li>- date placed into transport for offsite storage/disposal</li> <li>- date of disposal (if known)</li> <li>- weight of PCB Wastes <ul style="list-style-type: none"> <li>- total: bulk PCB Wastes</li> <li>- in each article: PCB Transformers or Capacitors</li> <li>- total in each container: PCB Containers</li> <li>- total weight of contents and of the PCB Article (in kilograms) in each PCB Article Container</li> </ul> </li> <li>- serial number or other unique identification number (except for bulk wastes)</li> <li>- description of the contents for PCB Containers and Article Containers.</li> </ul>



**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>PCB TRANSFORMERS</b></p> <p><b>8-14.</b> Facilities with transformers on their property that do not belong to FWS, should know whether or not the transformers are PCB Transformers (MP).</p> <p><b>8-15.</b> PCB Transformers with PCBs of 500 ppm or greater that are in use or in storage for reuse shall not pose an exposure risk to food and feed (40 CFR 761.30(a)(1)(i)).</p> <p><b>8-16.</b> PCB Transformers with concentrations of PCBs of 500 ppm or greater are subject to certain registration requirements (40 CFR 761.30(a)(1)(vi)).</p> <p><b>8-17.</b> Railroad transformers must not contain dielectric fluid with greater than 1000 ppm PCB and must be serviced according to specific requirements (40 CFR 761.30(b)(1)(vi), 761.30(b)(2)(iii), and 761.30(b)(2)(iv)).</p>	<p>Determine if the facility has transformers on the property not belonging to the facility.</p> <p>Verify that the facility is aware of the concentration of PCBs in the transformer through either a label on the transformer or documentation from the owners of the transformer.</p> <p>Determine if there are any PCB Transformers on the facility, in use or in storage for reuse, that pose an exposure risk to food and feed, by reviewing the inventory.</p> <p>Verify that all PCB Transformers, including those in storage for reuse, are registered with facility fire department, or the fire department with jurisdiction, with the following information:</p> <ul style="list-style-type: none"> <li>- physical location of PCB Transformer(s)</li> <li>- principle constituent of dielectric fluid (i.e., PCBs, mineral oil, silicone oil, etc.)</li> <li>- name and telephone number of contact person knowledgeable of PCB Transformer(s).</li> </ul> <p>Verify that railroad transformers do not exceed 1000 ppm PCB.</p> <p>Verify that servicing of a railroad transformer is only done with dielectric fluid containing less than 1000 ppm PCB.</p> <p>Verify that if the coil is removed from the casing of a railroad transformer, it is refilled with dielectric fluid containing 50 ppm or less PCB.</p> <p>(NOTE: Dielectric fluid may be filtered through activated carbon or otherwise industrially processed for the purpose of reducing the PCB concentration in the fluid.)</p>

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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>8-18.</b> Combustible materials, including but not limited to paints, solvents, plastics, paper, and sawn wood, must not be stored by a PCB Transformer (40 CFR 761.30(a)(1)(viii)).</p> <p><b>8-19.</b> PCB Transformers of concentrations of 500 ppm or greater in use in or near commercial buildings are subject to certain requirements (40 CFR 761.30(a)(1)(ii) through 761.30(a)(1)(v) and 761.30(a)(1)(vii)).</p>	<p>Verify that all combustible materials have been removed from the area within a PCB Transformer enclosure (i.e., vault or partitioned area) and the area within 5 m [16.40 ft] of a PCB Transformer or PCB Transformer enclosure.</p> <p>Determine if there are any transformers located in or near commercial buildings by reviewing the inventory.</p> <p>Verify that procedure/policy exists prohibiting installation of PCB Transformers which have been placed into storage for reuse or which have been removed from another location.</p> <p>Verify that there are no network PCB Transformers with higher secondary voltages (equal to or greater than 480 V, including 480/277 V systems) in or near commercial buildings.</p> <p>Determine where any of the following PCB Transformers are in use in or near commercial buildings or located in sidewalk vaults and if a plan exists to equip such PCB Transformers with electrical protection to avoid transformer failure that would result in release of PCBs:</p> <ul style="list-style-type: none"> <li>- Radial PCB Transformers and lower secondary voltage network PCB Transformers (voltage less than 480 V)</li> <li>- Radial PCB Transformers with higher secondary voltages (greater than or equal to 480 V including 480/277 V system).</li> </ul> <p>Determine if lower secondary voltage network PCB Transformers which have not been electrically protected were registered with the USEPA regional administrator and removed from service by 1 October 1993.</p> <p>Verify that all higher secondary voltage radial PCB Transformers, in use in or near commercial buildings, and lower secondary voltage network PCB Transformers not located in sidewalk vaults in or near commercial buildings, are equipped with:</p> <ul style="list-style-type: none"> <li>- electrical protection such as current-limiting fuses to avoid transformer ruptures</li> <li>- disconnect equipment to insure complete de-energization of the transformer in case of a sensed abnormal condition.</li> </ul>



**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<b>8-19. (continued)</b>	Verify that all lower secondary voltage radial PCB Transformers, in use in or near commercial buildings are equipped with electrical protection such as current limiting fuses or equivalent technology and provide for the complete de-energization of the transformer or complete de-energization of the faulted phase of the transformer within several hundredths of a second.
<b>8-20. PCB Transformers are required to be properly serviced (40 CFR 761.30(a)(2)).</b>	<p>Verify that servicing activities are properly conducted as follows:</p> <ul style="list-style-type: none"> <li>- transformers classified as PCB-contaminated Electrical Equipment (50 to 500 ppm PCB) are only serviced with dielectric fluid containing less than 500 ppm PCB</li> <li>- the transformer coil is not removed during servicing of PCB Transformers with PCB concentrations of 500 ppm or greater</li> <li>- PCBs removed during servicing are captured and are either reused as dielectric fluid or disposed of properly</li> <li>- the PCBs from a PCB Transformer with PCB concentrations of 500 ppm or greater are not mixed with or added to dielectric fluid from PCB-contaminated Electrical Equipment (50 to 500 ppm PCB)</li> <li>- dielectric fluids containing less than 500 ppm PCB that are mixed with fluids containing 500 ppm or greater are not used as dielectric fluid in any transformers classified as PCB-contaminated Electrical Equipment (50 to 500 ppm PCB).</li> </ul> <p>(NOTE: PCB Transformers may be serviced with dielectric fluid at any concentration.)</p>

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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>8-21.</b> Inspections must be performed once every 3 mo for all in-service PCB Transformers with greater than 500 ppm PCB (40 CFR 761.30(a)(1)(ix) and 761.30(a)(1)(xii) through 761.30(a)(1)(xiv)).</p>	<p>Verify that applicable transformers are inspected at least once every 3 mo by reviewing inspection records.</p> <p>Determine whether any PCB Transformers have been leaking.</p> <p>Verify that proper reporting procedures have been followed if any leaking transformers have been discovered.</p> <p>Verify that the following information is recorded for each PCB Transformer inspection:</p> <ul style="list-style-type: none"> <li>- location of transformer</li> <li>- dates of each visual inspection</li> <li>- date when any leak was discovered</li> <li>- name of person conducting inspection</li> <li>- location and estimate of the dielectric fluid quantity for any leaks</li> <li>- data and description of any cleanup, containment, or repair performed</li> <li>- results of any daily inspections for transformers with uncorrected active leaks.</li> </ul> <p>(NOTE: Reduced visual inspections of at least once every 12 mo is allowed for PCB Transformers with impervious, undrained secondary containment capacity of 100 percent of dielectric fluid and for PCB Transformers tested and found to contain less than 60,000 ppm PCBs.)</p> <p>(NOTE: Increased visual inspections of once a week is required for any PCB Transformer in use or stored for reuse which poses an exposure risk to food or feed.)</p> <p>Verify that records of inspection and maintenance are kept for 3 yr after disposal.</p>
<p><b>8-22.</b> PCB Transformers with PCB concentrations of 500 ppm or greater found to be leaking during an inspection must be repaired or replaced to eliminate the source of the leak (40 CFR 761.30(a)(1)(x)).</p>	<p>Determine if cleanup and/or containment of released PCBs has been initiated within 48 h of its detection or as soon as possible.</p> <p>Verify that leaking PCB Transformers are inspected daily.</p> <p>Determine if plans exist to repair or replace transformers to eliminate the source of the leak.</p> <p>Verify that cleaned up material is disposed of according to appropriate requirements.</p>

**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

8-23. When a PCB Transformer with concentrations of PCBs 500 ppm or greater is involved in a fire, the facility is required to immediately report the incident to the NRC (40 CFR 761.30(a)(1)(xi)).

**REVIEWER CHECKS:  
July 1995**

Determine if any PCB Transformers have been involved in any incident where sufficient heat and/or pressure was generated to result in the violent or nonviolent rupture of a PCB Transformer and the release of PCBs.

Verify that the NRC was notified and the following measures were taken:

- floor drains were blocked
- water runoff was contained.



<p align="center"><b>COMPLIANCE CATEGORY:</b>  <b>SPECIAL POLLUTANTS MANAGEMENT</b>  <b>Fish and Wildlife Service</b></p>	
<p align="center"><b>REGULATORY REQUIREMENTS:</b></p>	<p align="center"><b>REVIEWER CHECKS:</b>  <b>July 1995</b></p>
<p><b>PCB SPILLS</b></p> <p><b>8-24.</b> Facilities are required to report spills of 10 lb [4.53 kg] or more of PCBs of concentrations of 50 ppm or greater (40 CFR 761.120(a)(1), 761.123(d)(2), and 761.125(a)).</p> <p><b>8-25.</b> Cleanup of low concentration spills of less than 1 lb [0.45 kg] of PCBs (less than 270 gal [1022.26 L] of untested mineral oil) must be done according to specific requirements (40 CFR 761.120(a)(2), 761.120(b), 761.120(c), and 761.125(b)).</p>	<p>Verify that, when a spill of 10 lb [4.53 kg] or more directly contaminates surface water, sewers, or drinking water, the facility notifies the regional USEPA office within 24 h after discovery of the spill and acts on the guidance given by the USEPA.</p> <p>Verify that, if a spill of 10 lb [4.53 kg] or more directly contaminates grazing land or a vegetable garden, the facility notifies the USEPA regional office within 24 h after discovery and begins the cleanup of the spill.</p> <p>Verify that, when a spill of 10 lb [4.53 kg] or more occurs which does not directly contaminate surface waters, sewers, drinking water supplies, grazing land, or a vegetable garden, the facility notifies the USEPA Regional office within 24 h after discovery of the spill and begins decontamination of the spill area.</p> <p>(NOTE: Spills of greater than 1 lb [.45 kg] must be reported to the NRC under 40 CFR 302.1 through 302.6, see appropriate questions in Section 3, Hazardous Materials Management.</p> <p>Verify that solid surfaces are double washed/rinsed and all indoor, residential surfaces other than vault areas are cleaned to 10 µg/100 cm<sup>2</sup> by standard commercial wipe tests.</p> <p>Verify that all soil within the spill area (visible traces of soil and buffer of 1 lateral foot [3.28 lateral meters] around the visible traces) is excavated and the ground restored to its original status by backfilling with clean soil (soil with less than 1 ppm PCB).</p> <p>Verify that the above cleanup requirements are done within 48 h after identifying the spill unless an emergency or adverse weather delays the process.</p> <p>Verify that the cleanup is documented with records and certification of decontamination and the records are maintained for 5 yr.</p> <p>(NOTE: The final numerical cleanup standards do not apply to spills directly into surface waters, drinking water, sewers, grazing lands, and vegetable garden.)</p> <p>(NOTE: The USEPA may impose more stringent or less stringent cleanup requirements on a case by case basis depending on conditions such as possibility of groundwater contamination.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>8-26.</b> Cleanup of high-concentration spills and low concentration spills involving 1 lb [0.45 kg] or more of PCBs by weight (270 gal [1022.64 L] or more of untested mineral oil) must be done according to specific requirements (40 CFR 761.120(a)(2), 761.120(b), 761.120(c), and 761.125(c)).</p>	<p>Verify that the following actions are taken within 24 h (or within 48 h for PCB Transformer with PCB concentrations of greater than 500 ppm) of discovery of the spill:</p> <ul style="list-style-type: none"> <li>- notification of the USEPA regional office and the NRC</li> <li>- the area of the spill is cordoned off or otherwise identified to include the area with visible traces of the spill and a 3 ft [0.91 m] buffer zone. If there are no visible traces the area of the spill may be estimated.</li> <li>- clearly visible signs are placed advising persons to avoid the area</li> <li>- the area of visible contamination is recorded and documented, identifying the extent and center of the spill</li> <li>- cleanup of visible traces of the fluid from hard surfaces is initiated</li> <li>- removal of all visible traces of the spill on soil and other media such as gravel, sand, etc., is started.</li> </ul> <p>Verify that, if the spill occurs in an outdoor substation, the following is done:</p> <ul style="list-style-type: none"> <li>- contaminated solid surfaces are cleaned to a PCB concentration of 100 µg/cm<sup>2</sup> (as measured by standard wipe tests)</li> <li>- soil contaminated by the spill is cleaned to either 25 ppm PCBs by weight or 50 ppm PCBs by choice of the facility if a label to notice is placed in the area indicating the level of cleanup</li> <li>- post-cleanup sampling is done.</li> </ul> <p>Verify that, if the spill occurs in a restricted access area other than an outdoor substation, the following is done:</p> <ul style="list-style-type: none"> <li>- high-contact solid surfaces are cleaned to 10 µg/100 cm<sup>2</sup> (as measured by standard wipe tests)</li> <li>- low-contact, indoor, impervious solid surfaces are decontaminated to 10 µg/100 cm<sup>2</sup></li> <li>- low contact, indoor, nonimpervious surfaces are cleaned to either 10 micrograms or 100 µg/100 cm<sup>2</sup> and encapsulated at the option of the facility</li> <li>- low-contact, outdoor surfaces (both impervious and nonimpervious) are cleaned to 100 µg/100 cm<sup>2</sup></li> <li>- soil contaminated by the spill is cleaned to 25 ppm PCBs by weight</li> <li>- post-cleanup sampling is done.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
8-26. (continued)	<p>Verify that spills in nonrestricted access locations are decontaminated as follows:</p> <ul style="list-style-type: none"> <li>- furnishings, toys, and other easily replaceable household items are disposed of and replaced</li> <li>- indoor solid surfaces and high-contact outdoor solid surfaces are cleaned to 10 µg/100 cm<sup>2</sup> (as measured by standard wipe tests)</li> <li>- indoor vault areas and low-contact, outdoor, impervious solid surfaces are decontaminated to 10 µg/100 cm<sup>2</sup></li> <li>- at the option of the facility, low-contact, outdoor, nonimpervious solid surfaces are cleaned to either 10 or 100 µg/100 cm<sup>2</sup> and encapsulated</li> <li>- soil is decontaminated to 10 ppm PCBs by weight provided that the soil is excavated to a minimum depth of 10 in. [25.4 cm] and replaced with clean soil</li> <li>- post-cleanup sampling is done.</li> </ul> <p>Verify that records documenting all cleanup and decontamination are maintained for 5 yr.</p> <p>(NOTE: The occurrence/discovery of the spill on the weekend or overtime costs are not considered acceptable reasons to delay response.)</p> <p>(NOTE: The final numerical cleanup standards do not apply to spills directly into surface waters, drinking water, sewers, grazing lands, and vegetable gardens.)</p> <p>(NOTE: The USEPA may impose more stringent or less stringent cleanup requirements on a case by case basis depending on conditions such as possibility of groundwater contamination.)</p>





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<p><b>PCB ITEMS</b></p> <p><b>8-27.</b> PCBs may be used in heat transfer and hydraulic systems in a manner other than a totally enclosed manner at concentrations less than 50 ppm if specific requirements are met (40 CFR 761.30(d) through 761.30(e)).</p> <p><b>8-28.</b> Electromagnets, switches, and voltage regulators may contain PCBs at any concentrations if certain requirements are met (40 CFR 761.30(h)).</p> <p><b>8-29.</b> Capacitors may contain PCBs at any concentration subject to certain requirements (40 CFR 761.30(l)).</p>	<p>Determine if testing has been conducted to demonstrate that heat transfer or hydraulic systems that formerly contained PCBs at a concentration greater than 50 ppm now contain less than 50 ppm PCB.</p> <p>Verify that no fluid containing greater than 50 ppm PCB is added to heat transfer or hydraulic systems.</p> <p>Verify that results from analyses, which are performed to demonstrate presence of less than 50 ppm PCB, are retained for confirmation for at least 5 yr.</p> <p>Verify that heat transfer or hydraulic systems are free from leaks of dielectric PCBs.</p> <p>Verify that no electromagnets are used or stored at the facility that contain greater than 500 ppm PCB and pose an exposure risk to food or feed.</p> <p>Verify that electromagnets that contain greater than 500 ppm PCB and which pose an exposure risk to food or feed are inspected at least weekly to determine if they are leaking.</p> <p>Verify that electromagnets, switches, and voltage regulators, that contain 500 ppm or greater PCB, are not rebuilt and no removal or reworking of internal components is done during servicing.</p> <p>Verify that electromagnets, switches, and voltage regulators which contain between 50 and 500 ppm PCB (PCB-contaminated Electrical Equipment) are only serviced with dielectric fluid which that less than 500 ppm PCB.</p> <p>Verify that PCBs removed or captured are either reused as dielectric fluid or disposed of properly.</p> <p>Verify that dielectric fluid containing a mixture of fluids with less than 500 ppm PCBs are not used as dielectric fluid in any electrical equipment.</p> <p>Verify that all PCB Large, High- and Low-Voltage Capacitors that pose an exposure risk to food and feed have been removed.</p> <p>Verify that all PCB Large, High- and Low-Voltage Capacitors are in use only in restricted-access electrical substations, or in a contained and restricted-access indoor area.</p> <p>Verify that capacitors have been free from leaks of dielectric PCBs.</p>

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8-30. Circuit breakers, reclosers, and cable may contain PCBs at any concentration for remainder of their useful lives subject to certain conditions (40 CFR 761.30(m)).

Verify that any circuit breakers, reclosers, and cables used at the facility are serviced using only dielectric fluid which contains less than 50 ppm PCB and have been free from leaks.

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**PCBs IN RESEARCH**

8-31. The use of PCBs in research or microscopy is subject to certain conditions (40 CFR 761.30(j), and 761.30 (k)).

Verify that, if PCBs are used for research and development in a manner other than totally enclosed method, only small quantities are used.



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<b>PCB STORAGE</b>  <b>8-32.</b> PCBs and PCB Items at concentrations greater than 50 ppm that are to be stored before disposal must be stored in a facility that will assure the containment of PCBs (40 CFR 761.65 (a) through 761.65(b)).	<p>Verify that the following provisions are present by inspecting the PCB storage area:</p> <ul style="list-style-type: none"> <li>- the roof and walls of the building in which the PCBs are stored must be constructed so as to exclude rainfall from contacting PCBs and PCB Items</li> <li>- a 6 in. [15.24 cm] tall containment curb circumscribing the entire area in which any PCBs or PCB Items are stored. Such curbing shall effectively provide containment for twice the internal volume of the largest PCB Article or 25 percent of the total internal volume of all PCB Articles or Containers stored, whichever is greater.</li> <li>- drains, valves, floor drains, expansion joints, sewer lines or other openings that would allow liquids to flow from the curbed area, are not present</li> <li>- floors and curbing are constructed of continuous, smooth, and impervious material</li> <li>- location is not below a 100-yr flood water elevation.</li> </ul> <p>Verify that PCB Articles or PCB Containers are removed from storage and disposed of within 1 yr from the date they were placed in storage.</p>
<b>8-33.</b> PCB Items may also be stored in other areas that do not comply with the storage area requirements when such storage is for a period of less than 30 days and when any such PCB Items are marked with the date of removal from service (40 CFR 761.65(c)(1)).	<p>Verify that only the following items are stored and are properly marked in areas used as a 30 day storage area:</p> <ul style="list-style-type: none"> <li>- nonleaking PCB Articles and PCB Equipment</li> <li>- leaking PCB Articles and PCB Equipment placed in a nonleaking PCB Container which contains sufficient sorbent material to absorb liquid contained on the PCB Article or equipment</li> <li>- PCB Containers in which nonliquid PCBs have been placed</li> <li>- PCB Containers in which liquid PCBs at a concentration between 50 to 500 ppm have been placed when containers are marked to indicate less than 500 ppm PCB.</li> </ul> <p>Verify that the area has been included in the facility Spill Prevention, Control, and Countermeasure (SPCC) plan.</p>

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<p><b>8-34.</b> Nonleaking and structurally undamaged PCB Large, High-Voltage Capacitors and PCB-contaminated Electric Equipment that have not been drained of free-flowing dielectric fluid may be stored on pallets next to a storage area that complies with the storage area requirements (40 CFR 761.65(c)(2)).</p>	<p>Determine if available unfilled storage space in the storage area is equal to at least 10 percent of the volume of capacitors and electrical equipment stored outside.</p> <p>Verify that capacitors and equipment stored outside the storage facility are on pallets and inspected at least weekly.</p>
<p><b>8-35.</b> Specific operational procedures are required at PCB storage areas (40 CFR 761.65(c)(4), 761.65(c)(5), and 761.65(c)(8)).</p>	<p>Verify that the following practices are conducted at any areas where PCBs or PCB Items are stored:</p> <ul style="list-style-type: none"> <li>- movable equipment used for handling PCBs and PCB Items that directly contact PCBs is not removed from storage area unless decontaminated</li> <li>- inspections for leaks of all PCB Articles and PCB Containers in storage are done at least once every 30 days</li> <li>- any leaked PCBs are immediately cleaned up and any spill absorbent material properly disposed</li> <li>- PCB Articles and Containers are marked with the date when placed into storage</li> <li>- PCB Articles and PCB Containers are positioned so that they can be located by the date they were placed into storage</li> <li>- containers in which PCBs are accumulated have a record that includes quantity and date of each batch.</li> </ul>
<p><b>8-36.</b> Containers used for the storage of PCBs must comply with the shipping container specification of the DOT (40 CFR 761.65(c)(6) and 761.65(c)(7)).</p>	<p>Verify that DOT specifications are on drums/containers. Typical specifications are 5, 5B, 17C.</p> <p>(NOTE: Containers larger than those specified in DOT Specs 5, 5B, or 17C may be used for nonliquid PCBs when such containers will provide as much protection against leaking and exposure to the environment as the DOT specified containers.)</p> <p>Verify that containers used for storage of liquid PCBs are containers without removable heads.</p>

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<b>8-36. (continued)</b>	<p>Verify that, if the facility uses containers larger than DOT approved containers, it has prepared a SPCC plan covering its containers storing PCBs.</p>
<b>8-37. Commercial storers of PCB Waste must have final storage approval (40 CFR 761.65(d)).</b>	<p>Determine if the facility is a commercial storer of PCB or has a commercial storer of PCB Waste at the facility.</p> <p>Verify that the commercial storer has final storage approval from the USEPA Regional Administrator for PCB Waste.</p> <p>(NOTE: Commercial storers were required to file for final storage approval by 2 August 1990. After filing for final approval, they will operate under interim approval until the final decision is made on approval.)</p> <p>(NOTE: The following facilities may be exempt from this requirements for storage approval:</p> <ul style="list-style-type: none"> <li>- storage areas at transfer facilities unless the PCB Waste is stored at the facility for more than 10 consecutive days between destinations</li> <li>- storage areas at RCRA-permitted facilities if the facility proves to the Regional Administrator that the facility's existing RCRA closure plan substantially meets the requirements for a TSCA closure plan</li> <li>- storage areas ancillary to a TSCA approved disposal facility if the disposal approval contain an expiration date and the current disposal approval's closure and financial responsibility conditions specifically extend to storage areas ancillary to disposal.)</li> </ul>





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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>PCB TRANSPORTATION</b></p> <p>8-38. A generator who offers a PCB Waste for transport for commercial offsite storage or offsite disposal must prepare a manifest (40 CFR 761.207 through 761.210).</p>	<p>(NOTE: This applies to PCB Wastes as defined in 40 CFR 761.3, and that contain greater than 50 ppm PCB unless the concentration was reduced below 500 ppm by dilution.)</p> <p>Verify that a manifest has been prepared when needed and that it contains (use USEPA Form 8700-22):</p> <ul style="list-style-type: none"> <li>- the identity of PCB Waste, the earliest date of removal from service for disposal and the weight in kilograms of the waste for bulk load of PCBs</li> <li>- the unique identifying number of each PCB Article Container or PCB Container, the date of removal from service, type of waste, and the weight of PCB Waste contained</li> <li>- the serial number if available or other identification for each PCB Article not in a PCB Container or PCB Article Container, the date of removal from service for disposal, and weight in kilograms of the PCB Waste in each PCB Article.</li> </ul> <p>Verify that sufficient copies are prepared to supply the generator, the initial transporter, each subsequent transporter, and the owner or operator of the disposal facility with one legible copy each for their records, and one additional copy to be signed and returned to the generator by the owner or operator of the disposal facility.</p> <p>Verify that the generator maintains a copy of the signed manifest for at least 3 yr after receipt of waste by the initial transporter.</p>

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<p>8-39. If the generator does not receive a signed copy of the manifest within 35 days of the date the waste was accepted by the initial transporter, the generator should immediately contact the transporter and/or owner or operator of the designated facility to determine the status of the PCB Waste (40 CFR 761.215(a) and 761.215(b)).</p>	<p>Verify that a procedure is in place so that if the generator does not receive a copy within 35 days of the date the waste was accepted by the initial transporter, the transporter and/or designated facility is immediately contacted.</p> <p>Verify that, if the generator does not receive a copy within 45 days of the date the waste was accepted by the initial transporter, an Exception Report is filed with the USEPA containing the following information:</p> <ul style="list-style-type: none"> <li>- a legible copy of the manifest for which the generator does not have confirmation of delivery</li> <li>- a cover letter signed by the generator or his authorized representative explaining the efforts taken to locate the PCB Waste and the results of those efforts.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>PCB DISPOSAL</b></p> <p><b>8-40.</b> For each shipment of manifested PCB Waste that a disposal facility accepts, the owner or operator of the disposal facility must prepare a Certificate of Disposal (COD) (40 CFR 761.218).</p> <p><b>8-41.</b> PCB-contaminated fluids other than mineral oil dielectric fluid at concentrations greater than 50 ppm but less than 500 ppm are required to be disposed of according to specific requirements (40 CFR 761.60(a)(3)).</p>	<p>Verify that a COD has been prepared containing the following information:</p> <ul style="list-style-type: none"> <li>- the identity of the disposal facility by: name, address, and USEPA identification number</li> <li>- the identity of the PCB Waste affected by the COD including reference to the manifest number for the shipment</li> <li>- a certification as defined in 40 CFR 761.3.</li> </ul> <p>Verify that a copy of the COD was:</p> <ul style="list-style-type: none"> <li>- sent to the generator identified on the manifest within 30 days of the date that disposal of the PCB Waste was completed</li> <li>- retained at the facility with the annual report.</li> </ul> <p>Determine if any PCB fluids meeting these criteria were processed for disposal in the last year.</p> <p>Verify that disposal was done at:</p> <ul style="list-style-type: none"> <li>- a USEPA-approved incinerator</li> <li>- a USEPA-approved chemical waste landfill</li> <li>- a high efficiency boiler.</li> </ul> <p>Verify that, if the fluid is burned in an high efficiency boiler, the following requirements are met:</p> <ul style="list-style-type: none"> <li>- the boiler is rated at a minimum of 50 million British thermal unit (MBtu)/h [14.65 MW]</li> <li>- the CO concentration in the stack is 50 ppm or less and the excess O<sub>2</sub> is at least 3 percent when PCBs are being burned and the boiler uses natural gas or oil as the primary fuel</li> <li>- the CO concentration in the stack is 100 ppm or less and the O<sub>2</sub> content is at least 3 percent when PCBs are being burned and the boiler uses coal as the primary fuel</li> <li>- the waste does not compromise more than 10 percent (on a volume basis), of the total fuel feed rate</li> <li>- the waste is not fed into the boiler unless the boiler is operating at its normal operating temperature</li> </ul>

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<p><b>8-41. (continued)</b></p>	<ul style="list-style-type: none"> <li>- the operator of the boiler does one of the following:               <ul style="list-style-type: none"> <li>- continuously monitors and records the CO concentrations and excess O<sub>2</sub> percentages in the stack gas while burning the waste fluid</li> <li>- measure and records the CO concentration and excess O<sub>2</sub> percentage in the stack gas at regular intervals of no longer than 60 min if the boiler will burn less than 30,000 gal/yr [113,562.36 L/yr] of waste fluid</li> <li>- measures and records the primary fuel feed rates, the waste fluid feed rates, and total quantities of both primary fuel and waste fluid fed to the boiler at regular intervals of no longer than 15 min</li> <li>- checks the CO concentration and the excess O<sub>2</sub> percentage at least once every hour and if either measurement falls below the specified levels, the flow of the waste fluid to the boiler stops immediately.</li> </ul> </li> </ul> <p>Verify that before burning waste fluid, approval has been obtained from the USEPA Regional Administrator.</p> <p>Verify that the following information is obtained by persons burning waste fluid in a boiler and kept at the boiler location for 5 yr:</p> <ul style="list-style-type: none"> <li>- emissions data</li> <li>- the quantity of waste fluid burned in the boiler each month</li> <li>- a waste analysis.</li> </ul> <p>Verify that such PCB fluids were disposed of by an approved method at a properly licensed facility.</p>
<p><b>8-42. PCBs at concentrations greater than 50 ppm must be disposed of in an incinerator which is approved by USEPA to incinerate PCBs (40 CFR 761.60(a)(1)).</b></p>	<p>Verify that all shipments were made to USEPA licensed PCB incinerators by reviewing manifests for a PCB shipments over the past 3 yr.</p> <p>(NOTE: Other disposal provisions apply to:</p> <ul style="list-style-type: none"> <li>- mineral oil dielectric fluid from PCB-contaminated Electrical Equipment with a concentration greater than 50 ppm but less than 500 ppm</li> <li>- liquids, other than mineral oil dielectric fluids, with PCB concentrations between 50 and 500 ppm</li> <li>- rags, solids, and other debris contaminated with PCB at concentrations greater than 50 ppm</li> <li>- PCB Articles.)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>8-43.</b> Mineral oil dielectric fluid from PCB-contaminated Electrical Equipment containing a PCB concentration greater than 50 ppm but less than 500 ppm is required to be disposed of according to specific methods (40 CFR 761.60(a)(2)).</p>	<p>Verify that mineral oil dielectric fluid as described is disposed of in one of the following ways:</p> <ul style="list-style-type: none"> <li>- an USEPA approved incinerator</li> <li>- an approved chemical waste landfill if written information proves that the fluid is not contaminated at greater than 500 ppm and is not an ignitable waste</li> <li>- an approved high efficiency boiler that is rated at a minimum of 50 MBtu/h [14.65 MW].</li> </ul> <p>Verify that, if the fluid is burned in an high efficiency boiler, the following requirements are met:</p> <ul style="list-style-type: none"> <li>- the boiler is rated at a minimum of 50 MBtu/h [14.65 MW]</li> <li>- the CO concentration in the stack is 10 ppm or less and the excess O<sub>2</sub> is at least 3 percent when PCBs are being burned and the boiler uses natural gas or oil as the primary fuel</li> <li>- the CO concentration in the stack is 100 ppm or less and the O<sub>2</sub> content is at least 3 percent when PCBs are being burned and the boiler uses coal as the primary fuel</li> <li>- the mineral oil dielectric fluid does not compromise more than ten percent (on a volume basis), of the total fuel feed rate.</li> <li>- the mineral oil dielectric fluid is not fed into the boiler unless the boiler is operating at its normal operating temperature</li> <li>- the operator of the boiler does one of the following: <ul style="list-style-type: none"> <li>- continuously monitors and records the CO concentrations and excess O<sub>2</sub> percentages in the stack gas while burning mineral oil dielectric fluid</li> <li>- measure and records the CO concentration and excess O<sub>2</sub> percentage in the stack gas at regular intervals of no longer than 60 min if the boiler will burn less than 30,000 gal [113,562.36 L] of mineral oil dielectric fluid per year</li> <li>- measure and record the primary fuel feed rates, the mineral oil dielectric fluid feed rates, and total quantities of both primary fuel and mineral oil dielectric fluid fed to the boiler at regular intervals of no longer than 15 min</li> <li>- checks the CO concentration and the excess O<sub>2</sub> percentage at least once every hour and if either measurement falls below the specified levels, the flow of the mineral oil dielectric fluid to the boiler stops immediately.</li> </ul> </li> </ul> <p>Verify that, 30 days before burning mineral oil dielectric fluid, a written notice of the burning is given to the USEPA Regional Administrator.</p>

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<b>8-43. (continued)</b>	<p>Verify that the following information is obtained by persons burning mineral oil dielectric fluid in a boiler and kept at the boiler location for 5 yr:</p> <ul style="list-style-type: none"> <li>- emissions data</li> <li>- the quantity of mineral oil dielectric fluid burned in the boiler each month.</li> </ul>
<p><b>8-44.</b> Rags, soils, and other debris contaminated with PCBs at concentrations greater than 50 ppm must be disposed of in a PCB incinerator or in a chemical waste landfill (40 CFR 761.60(a)(4)).</p>	<p>Determine if any contaminated soil or debris has been disposed of, and verify that disposal was conducted at a properly licensed facility.</p>
<p><b>8-45.</b> PCB Transformers with PCB concentrations of 500 ppm or greater shall be disposed of in either a USEPA approved incinerator or a chemical waste landfill (40 CFR 761.60(b)(1)).</p>	<p>Determine if the PCB Transformers are being disposed of at a USEPA-approved incinerator or a chemical waste landfill.</p> <p>Verify that, if disposal is being done at a chemical waste landfill, the transformer is drained of all free-flowing liquids, filled with solvent, allowed to stand for at least 18 h, and then drained thoroughly.</p>
<p><b>8-46.</b> PCB Capacitors must be disposed of in accordance with certain facility regulations (40 CFR 761.60(b)(2)).</p>	<p>Verify that disposal of PCB Capacitors is done as follows:</p> <ul style="list-style-type: none"> <li>- PCB Small Capacitors (less than 1.36 kg (3 lb) of PCBs) are disposed of in a solid waste landfill</li> <li>- PCB Large, High- or Low-Voltage Capacitors (greater than 1.36 kg (3 lb) of PCBs) containing more than 500 ppm are incinerated in a USEPA approved incinerator.</li> </ul> <p>(NOTE: The Large, High-, or Low-Voltage Capacitors may be disposed of in a chemical waste landfill upon approval of the USEPA.)</p> <p>Verify that capacitors in storage are placed in DOT containers with absorbent material.</p>

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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>8-47.</b> PCB hydraulic machines containing PCBs at concentrations greater than 50 ppm may be disposed of as municipal solid waste if specific conditions are met (40 CFR 761.60 (b)(3)).</p>	<p>Verify that the machines are drained of all free-flowing liquid.</p> <p>Verify that if the machine contained PCB liquid of 1000 ppm PCB or greater, it is flushed prior to disposal with a solvent containing less than 50 ppm PCB.</p>
<p><b>8-48.</b> PCB-contaminated Electrical Equipment (50 to 500 ppm PCB), except capacitors, shall be disposed of by draining off the free-flowing liquid (40 CFR 761.60(b)(4)).</p>	<p>Verify that the free-flowing liquid is drained from electrical equipment and the liquid disposed of correctly.</p> <p>(NOTE: The disposal of the drained electrical equipment is not regulated.)</p>
<p><b>8-49.</b> PCB Articles shall be disposed of properly (40 CFR 761.60(b)(5)).</p>	<p>Verify that PCB Articles with concentrations at 500 ppm or greater are disposed of in either:</p> <ul style="list-style-type: none"> <li>- a USEPA-approved incinerator</li> <li>- a chemical waste landfill if all free-flowing liquids have been removed.</li> </ul> <p>Verify that PCB Articles with PCB concentration between 50 and 500 ppm are drained of all free-flowing liquid.</p>
<p><b>8-50.</b> PCB Containers shall be disposed of properly (40 CFR 761.60(c)).</p>	<p>Verify that PCB Containers with concentrations of 500 ppm or greater are disposed of in one of the following ways:</p> <ul style="list-style-type: none"> <li>- in a USEPA-approved incinerator</li> <li>- in a chemical waste landfill if first the container is drained of any liquid PCBs.</li> </ul> <p>Verify that PCB Containers used to contain only PCBs at concentrations less than 500 ppm are drained of PCB liquid prior to disposal as municipal solid waste.</p>





**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:  
July 1995**

**ASBESTOS  
IDENTIFICATION**

**8-51.** Regions are required to implement a program to inspect buildings under their control for the presence of asbestos (561 FW 8.6A(1)).

Verify that the buildings and facility support system have been surveyed for the presence of asbestos.

**8-52.** All ACM left in place will be labeled to alert potential maintenance operations of the potential hazard (561 FW 8.6C(2)).

Verify that ACM at the facility is labeled.



**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>RENOVATION AND DEMOLITION OF ASBESTOS-CONTAINING STRUCTURES</b></p> <p><b>8-53.</b> Facilities that demolish structures containing at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m<sup>2</sup> (160 ft<sup>2</sup>) of RACM on other facility components or at least 1 m<sup>3</sup> (35 ft<sup>3</sup>) off facility components, and facilities renovating structures and stripping or removing at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m<sup>2</sup> (160 ft<sup>2</sup>) of friable asbestos on other facility components and at least 1 m<sup>3</sup> (35 ft<sup>3</sup>) off facility components must meet certain notification requirements (40 CFR 61.145(a)(1), 61.145(a)(3), and 61.145(b)).</p>	<p>Determine if the USEPA has been provided with written notice of intent to demolish or renovate at least 10 working days before demolition begins and as early as possible before renovation begins.</p> <p>Verify that the written notice contains the following information:</p> <ul style="list-style-type: none"> <li>- name of facility owner/operator and telephone number</li> <li>- name and address of facility</li> <li>- description of facility being renovated or demolished (size, age, prior use)</li> <li>- estimates of approximate amount (linear feet or surface area) of asbestos present in the facility</li> <li>- location of the facility</li> <li>- scheduled start and completion dates of renovation or demolition</li> <li>- nature of planned demolition or renovation methods to be used</li> <li>- procedures for asbestos emissions control</li> <li>- name and location of waste disposal site where asbestos will be disposed)</li> <li>- whether or not it is a revised notification</li> <li>- after 20 November 1991, certification that at least one trained person will supervise.</li> </ul> <p>(NOTE: Facilities are also required to submit notifications following these guidelines for facilities being demolished under an order of a state or local governmental agency because the facility is structurally unsound and in danger of imminent collapse.)</p>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>8-54.</b> Facilities demolishing a facility with RACM of less than 80 linear meters (260 linear feet) on pipes and less than 15 m<sup>2</sup> (160 ft<sup>2</sup>) on other facility components and less than 1 m<sup>3</sup> (35 ft<sup>3</sup>) off facility components are required to submit notification of demolition (40 CFR 61.145(a)(2) and 61.145(b)).</p>	<p>Verify that a written notice of intent to demolish has been submitted to the Administrator at least 10 working days before demolition and includes:</p> <ul style="list-style-type: none"> <li>- the name and address of owner and operator</li> <li>- description of the facility being demolished including the size, age, and prior use</li> <li>- estimate of the approximate amount of friable asbestos present</li> <li>- location of the facility</li> <li>- schedule</li> <li>- procedures to be used.</li> </ul>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>8-55.</b> Facilities that demolish structures which contain at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m<sup>2</sup> (160 ft<sup>2</sup>) of RACM on other facility components and facilities renovating structures and stripping or removing at least 80 linear meters (260 linear feet) of friable asbestos on pipes, or at least 15 m<sup>2</sup> (160 ft<sup>2</sup>) of friable asbestos on other facility components or 1 m<sup>3</sup> (35 ft<sup>3</sup>) or more off facility components must meet certain emission control requirements (40 CFR 61.145(a)(1) through 61.145(a)(3) and 61.145(c)(1) through 61.145(c)(3)).</p>	<p>Verify that all RACM are removed from facilities being demolished or renovated before any wrecking or dismantling unless:</p> <ul style="list-style-type: none"> <li>- it is a Category I nonfriable ACM that is not in poor condition and is not friable</li> <li>- the RACM is on a facility component that is encased in concrete or other similar material and is adequately wetted whenever exposed during demolition</li> <li>- it was not accessible for testing and is not discovered until after demolition began and, as a result of demolition, the materials cannot be safely removed</li> <li>- it is Category II nonfriable ACM and the probability is low that the materials will become crumbled, pulverized, or reduced to powder, during demolition.</li> </ul> <p>Verify that when a facility component that contains or is covered or coated with RACM is being taken out of the facility in units or sections:</p> <ul style="list-style-type: none"> <li>- they are adequately wetted when RACM are exposed during cutting and disjoining operations, and</li> <li>- the units or sections are carefully lowered to ground level.</li> </ul> <p>Verify that RACM is adequately wetted when it is being stripped from facility components while it remains in place in the facility except in renovation operation where wetting would unavoidably damage equipment and the facility:</p> <ul style="list-style-type: none"> <li>- requests a determination from the Administrator as to whether unavoidable damage would occur and supply Administrator with the information needed to make the decision</li> <li>- uses one of the following emission control methods: <ul style="list-style-type: none"> <li>- a local exhaust ventilation and collection system</li> <li>- a glove bag system</li> <li>- leaktight wrapping to contain all RACM.</li> </ul> </li> </ul>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>8-56.</b> Emissions from facility components that have been taken out in units or in sections from facilities being demolished under state or local orders or facilities being demolished or renovated with at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m<sup>2</sup> (160 ft<sup>2</sup>) of RACM on other facility components or at least 1 m<sup>3</sup> (35 ft<sup>3</sup>) off facility components must be controlled (40 CFR 61.145 (c)(4) and 61.145(c)(5)).</p> <p><b>8-57.</b> Emissions from RACM that has been removed or stripped from facilities being demolished under state or local orders or facilities being demolished or renovated with at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m<sup>2</sup> (160 ft<sup>2</sup>) of RACM on other facility components or 1 m<sup>3</sup> (35 ft<sup>3</sup>) or greater off facility components must be controlled (40 CFR 61.145(c)(6)).</p>	<p>Verify that facility components are either stripped or contained in leaktight wrappings.</p> <p>Verify that facility components removed from facility as units or in sections for stripping meet the following:</p> <ul style="list-style-type: none"> <li>- RACM is adequately wet during stripping operations</li> <li>- a local exhaust ventilation and collection system designed and operated to capture emissions is in use</li> <li>- the exhaust system exhibits no visible emissions to outside air.</li> </ul> <p>Verify that when wetting operations are stopped because of the temperature, a record of the temperature is made and kept on file for 2 yr.</p> <p>(NOTE: For large facility components such as reactor vessels, large tanks, and steam generators, but not beams, stripping is not required if the following are met:</p> <ul style="list-style-type: none"> <li>- the component is removed, transported, stored, disposed of, or reused without disturbing the RACM</li> <li>- the component is encased in leaktight wrapping and labelled.)</li> </ul> <p>Verify that asbestos materials that have been removed or stripped meet the following:</p> <ul style="list-style-type: none"> <li>- materials are adequately wet, and remain wet until collected for disposal</li> <li>- materials are carefully lowered to the ground or lower floor (not dropped or thrown)</li> <li>- materials not removed as units or in sections are transported to the ground via dust-tight chutes or containers if they are removed more than 50 ft [1524 cm] above ground level.</li> </ul>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>8-58.</b> When the temperature at the point of wetting is below 0 °C [32 °F] and facilities are being demolished under state or local orders or facilities with at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m<sup>2</sup> (160 ft<sup>2</sup>) of RACM other facility components or at least 1 m<sup>3</sup> (35 ft<sup>3</sup>) of facility components are being demolished or renovated, specific exemptions and requirements apply (40 CFR 61.145(c)(7)).</p>	<p>Verify that facility components coated or covered with RACM materials are removed as units or in sections to the maximum extent possible.</p> <p>(NOTE: Wetting is not required at this temperature.)</p> <p>Verify that, when wetting operations are stopped because of freezing temperatures, the temperature is recorded in the areas containing the facility components at the beginning, middle, and end of each work day.</p> <p>Verify that the temperature records are kept for 2 yr.</p>
<p><b>8-59.</b> Facilities being demolished under state or local governmental agency orders shall have the portion of the facility containing friable asbestos adequately wetted during the wrecking operation (40 CFR 61.145 (c)(9)).</p>	<p>Verify that, in facilities being demolished under state or local governmental agency orders, the portion of the facility that contains friable asbestos materials is adequately wetted during the wrecking operation.</p>
<p><b>8-60.</b> When a facility is demolished by intentional burning, all RACM, including Category I and II nonfriable ACM must be removed (40 CFR 61.145(c)(10)).</p>	<p>Verify that complex removal is done before burning.</p>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>8-61.</b> When air cleaning is used as a method for controlling emissions of asbestos to the outside air, the fabric filter collection systems are required to meet specific standards unless alternative equipment is authorized for use by the USEPA (40 CFR 61.152).</p>	<p>Verify that fabric filter collection systems meet the following requirements:</p> <ul style="list-style-type: none"> <li>- airflow permeability does not exceed <math>9 \text{ m}^3/\text{min}/\text{m}^2</math> (<math>30 \text{ ft}^3/\text{min}/\text{ft}^2</math>) for woven fabrics or <math>11 \text{ m}^3/\text{min}/\text{m}^2</math> (<math>35 \text{ ft}^3/\text{min}/\text{ft}^2</math>) for felted fabrics</li> <li>- the felted fabric weighs at least <math>475 \text{ g}/\text{m}^2</math> (<math>14 \text{ oz}/\text{yd}^2</math>) and is at least 1.6 mm (1/16 in.) thick throughout</li> <li>- the use of synthetic fabrics containing fill yarn other than that which is spun is avoided.</li> </ul>



**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>ASBESTOS TRAINING</b></p> <p><b>8-62.</b> No RACM shall be stripped, removed, or otherwise handled or disturbed unless at least one onsite representative trained in asbestos removal is present (40 CFR 61.145(c)(8)).</p> <p><b>8-63.</b> All employees working with asbestos at levels at or above the permissible exposure level (PEL) and/or excursion limit for 30 or more days per year are required to participate in a medical surveillance program (561 FW 8.6H).</p>	<p>Verify that a trained person is present.</p> <p>Verify that the individual receives refresher training every 2 yr.</p> <p>(NOTE: This applies to quantities of at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m<sup>2</sup> (160 ft<sup>2</sup>) of RACM on other facility components or 1 m<sup>3</sup> (35 ft<sup>3</sup>) or greater off facility components.)</p> <p>(NOTE: The current PEL is an airborne concentration of asbestos of 0.1 fiber/cc of air or higher as calculated as an 8 h time weighted average (TWA). The excursion limit is 0.1 fiber/cc of air or higher as measured over a 30 min period.)</p> <p>Verify that appropriate personnel participate in the program.</p>



<b>COMPLIANCE CATEGORY:</b> <b>SPECIAL POLLUTANTS MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<b>ASBESTOS DISPOSAL</b>  <b>8-64.</b> Asbestos-containing waste materials are required to be disposed of properly (40 CFR 61.150(a) through 61.150(b)).	<p>(NOTE: These requirements do not apply to Categories I or II nonfriable ACM that did not become crumbled, pulverized, or reduced to powder.)</p> <p>Verify that no visible emissions are discharged to the outside air during the collection, processing, packaging, transporting, or depositing of asbestos-containing waste material, or that the facility uses one of the following methods:</p> <ul style="list-style-type: none"> <li>- the asbestos-containing waste is adequately wetted</li> <li>- the asbestos-containing waste is processed into nonfriable forms</li> <li>- an alternative method approved by the USEPA.</li> </ul> <p>Verify that, if the waste is wetted, the following is done:</p> <ul style="list-style-type: none"> <li>- asbestos waste from control devices is mixed with water to form a slurry and the other materials are adequately wetted</li> <li>- no visible emissions are discharged or air cleaning is used to control the emissions</li> <li>- the wetted materials are sealed in leaktight containers while wet and labeled with the phrase CAUTION, CONTAINS ASBESTOS - AVOID OPENING OR BREAKING CONTAINER, BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH or a label approved by OSHA</li> <li>- materials that don't fit in containers are put into leaktight wrapping.</li> </ul> <p>Verify that the waste generator deposits all ACM as soon as practical at one of the following:</p> <ul style="list-style-type: none"> <li>- a properly operated waste disposal site</li> <li>- a USEPA approved site that converts RACM and asbestos-containing waste material into asbestos-free material.</li> </ul>
<b>8-65.</b> Asbestos-containing waste must be transported according to specific parameters (40 CFR 61.150(c) through 61.150(e)).	<p>Verify that vehicles used to transport asbestos-containing waste material are marked indicating an asbestos dust hazard.</p> <p>Verify that, for all ACM transported off the facility, waste shipment records are maintained for at least 2 yr and a copy is provided to the waste disposal site.</p> <p>Verify that a procedure is in place to notify the local, state, or USEPA regional office if a copy of the waste shipment record is not returned to the waste generator within 35 days after the waste was accepted by the initial transporter.</p>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:  
July 1995**

**8-66.** Active waste disposal sites where ACM is being disposed of are required to meet specific standards (40 CFR 61.154(a) through 61.154(e) and 61.154(i) through 61.154(j)).

Determine if the facility is operating a landfill where asbestos is being disposed.

Verify that there are no visible emissions from active asbestos-containing waste disposal sites, or that:

- at the end of each operating day, or once in a 24 h period, the waste material is covered with either at least 15 cm (6 in.) of compacted non-ACM
- a resinous or petroleum based dust suppression agent is applied, waste crankcase oil is not suitable for this purpose
- an alternative method of control approved by the USEPA is used.

Verify that, unless a natural barrier exists deterring access by the general public, that either the waste is properly covered by non-ACM daily or proper warning signs and fences are installed and maintained as follows:

- warning signs are displayed at all entrances at intervals of 100 m (330 ft) or less along property line of the site or the perimeter of the section of the site where ACM is disposed and state that the site contains asbestos and warns against creating dust
- the area is adequately fenced.

Verify that a copy of waste shipment records are maintained for 2 yr.

Verify that until closure, a record is kept of the location, depth, and area of asbestos-containing waste on a map or diagram of the disposal area.

Verify that upon closure, the administration receives a copy of all records.

Verify that a procedure is in place to notify the administration in at least 45 days prior to excavating or disturbing deposited asbestos-containing waste material.

**8-67.** Inactive waste disposal sites are required to meet specific standards (40 CFR 61.154(f) through 61.154(h) and 61.151).

Verify that inactive waste disposal sites meet one of the following:

- no visible emissions are discharged
- asbestos-containing waste material is covered with at least 15 cm (6 in.) of compacted non-ACM, and a vegetation cover is grown and maintained.  
(NOTE: In desert areas where vegetation is difficult to maintain at least 8 cm (3 in.) additional of well-graded nonasbestos-containing crushed rock may be used instead.)
- cover the asbestos-containing waste material with at least 60 cm (2 ft) of non-ACM and maintain the cover to prevent exposure.

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<b>8-67. (continued)</b>	<p>Verify that, unless a natural barrier exists, warning signs and a fence are installed to deter public access.</p> <p>Verify that warning signs are displayed at all entrances and at intervals of 100 m (328 ft) or less and are easily read indicating the area is an asbestos waste disposal site.</p> <p>Verify that a procedure is in place to notify the administrator in writing at least 45 days prior to excavating or disturbing any asbestos-contaminated waste material at an inactive waste disposal site.</p>



**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:  
July 1995**

**RADON GAS**

**8-68.** FWS facilities are required to test for radon according to specific procedures (Department of the Interior (DOI) 485 DM, para 27.4a and 27.4b).

Verify that the monitor was in place for 90 days.

Verify that screening tests were conducted on the lowest occupiable level (basement) and on the first above ground floor.

Verify that the testing was done during the time of year when the building is normally kept closed.

Verify that the following have been tested:

- schools, medical facilities, living quarters, and daycare facilities
- structures that are occupied for more than 520 h/yr, including dwellings, offices, and workspaces.

Verify that, if the screening result was 4 to 20 pCi/L, a 12-mo alpha track device was placed in the lowest lived-in area to obtain a more accurate assessment of the annual average radon level.

Verify that, if the screening result is greater than 20 pCi/L, short-term measurements using charcoal canisters or continuous radon monitors is undertaken to verify the screening results and better estimate the annual average radon level.

**8-69.** Depending on the results of the radon tests, specific mitigation measures must be taken (DOI 485 DM, para 27.4c).

Verify that occupied structures with an annual average radon levels greater than 4.0 pCi/L are required to be mitigated according to the following schedule:

Annual Average Radon Level (pCi)	Residential Living Spaces	Office Working Spaces
> 200	1 mo	3 mo
20 - 200	1 yr	2 yr
10 - 19.9	2 yr	4 yr
4 - 9.0	4 yr	6 yr
< 4	No mitigation	No mitigation

(NOTE: If additional time is required for mitigation in areas where the result was greater than 200 pCi, the premises must be vacated until the mitigation achieves a reduction to lower radon levels.)

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:  
July 1995**

**8-70.** Structures which have undergone mitigation are required to undergo additional monitoring (DOI 485 DM, para 4.27d).

Verify that, if a structure has undergone mitigation, it is re-tested according to the following schedule:

Premitigation Level (pCi)	Re-testing Frequency
> 200	Annual
20 - 200	Every 2 yr
10 - 19.9	Every 4 yr
4 - 9.9	Every 10 yr.



**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>ENVIRONMENTAL NOISE</b></p> <p><b>8-71.</b> A single facility point-of-contact (POC) should be identified for noise complaints (MP).</p>	<p>Verify that a POC has been identified if the facility has activities that produce noise that would potential disturb people outside the property lines.</p> <p>Verify that the POC keeps a log of complaints.</p>



Appendix 8-1  
PCB Label Format

<p><b>CAUTION</b></p> <p><b>CONTAINS</b></p> <p><b>PCBs</b></p> <p><b>(Polychlorinated Biphenyls)</b></p> <p>A toxic environmental contaminant requiring special handling and disposal in accordance with U.S. Environmental Protection Agency Regulations 40 CFR 761 -- For Disposal Information contact the nearest U.S. E.P.A. Office</p> <hr/> <p>In case of accident or spill, call toll free the U.S. Coast Guard National Response Center: 800:424-8802</p> <p>Also Contact _____ Tel. No. _____</p>
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## Appendix 8-2

### Dielectric Fluid Trend Names and Manufacturers

#### 1. U.S. Manufactured Dielectrics:

Name	Manufacturer
Aroclor	Monsanto
Aroclor B	Mallory
Sbestol	American Corporation
Askarel Hevi-Duty	Hevi-Duty Corporation
Askarel *	Ferranti-Packard, Ltd.
Askarel	Universal Mfg. Co.
Chlorextol	Allis-Chalmers
Chlorinol	Sparagoe Electric
Chlorphen	Jard Company
Diactor	Sangamo Electric
Dykanol	Cornell Dubilier
Elemex	McGraw Edison
Eucarel	Electric Utilities Co.
Hyvol	Aerovox
Inerteen	Westinghouse Electric
No-Flamol	Wagner Electric
Pyranol	General Electric
Saf-T-Kuhl	Kuhlman Electric

\* Generic name used for insulating liquids in capacitors and transformers.

#### 2. Foreign Manufactured Dielectrics:

Name	Manufacturer
Clophen	Bayer (Germany)
Fenclo	Caffaro (Italy)
Kennechlor	Mitsubishi (Japan)
Phenoclor	Prodelec (France)
DK	Caffaro (Italy)
Pyralene	Prodelec (France)
Solvot	USSR
Santotherm	Mitsubishi (Japan)

3. Transformers that list other dielectrics or do not bear a manufacturer's identification or service plate on the transformer: if the transformer contains any of the dielectrics (commonly referred to as askarels), it is to be certified as a PCB transformer containing in excess of 500 ppm PCB and no laboratory testing is necessary.



<b>FACILITY:</b>	<b>COMPLIANCE CATEGORY:</b> <b>SPECIAL POLLUTANTS MANAGEMENT</b> Fish and Wildlife Service	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> NA      C      RMA	<b>REVIEWER CHECKS:</b>		

## SECTION 9

### UNDERGROUND STORAGE TANK (UST) MANAGEMENT

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**The contents of this section are the minimum requirements the auditor must review. The auditor must also review applicable state and local regulations.**



## SECTION 9

### UNDERGROUND STORAGE TANK (UST) MANAGEMENT

#### A. Applicability

This section applies to FWS facilities that utilize USTs for storage of hazardous materials or petroleum products. This section presents review action items for the proper management of USTs. The evaluation of UST management ranges from the installation of new systems and the maintenance of existing systems, to the repair, replacement, or permanent removal of USTs.

#### B. Federal Legislation

- *The Resource Conservation and Recovery Act (RCRA)*, Subtitle I. This law, Public Law (PL) 99-49 (42 U.S. Code (USC) 6991-6991i), established the standards and procedures for USTs. It required the U.S. Environmental Protection Agency (USEPA) to issue standards on leak detection, record maintenance, release reporting, corrective actions, tank upgrading, and replacement (42 USC 6991b(a)(c)).
- Executive Order (EO) 12088, *Federal Compliance with Pollution Standards*. This EO of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements or for correcting situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.
- Federal regulations used to develop the checklist include:
  - EO 12088, *Federal Compliance with Pollution Control Standards*.
  - 40 CFR 280, *Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)*.

#### C. State/Local Requirements

Many state and local governments have active UST programs. These various governments have developed regulations specific to the physical environment and the regulated communities' needs. It is important to review regulations at the state and local level to ensure that any differences such as reporting or notice requirements, and monitoring requirements are complied with.

#### D. FWS/DOI Manuals

- 561 FW 7, Compliance Requirements RCRA - Underground Storage Tanks. This chapter, dated 20 June 1995, provides guidance for management of USTs at Service facilities.

## E. Key Compliance Requirements

- Substandard USTs - Substandard UST systems must be upgraded, closed, or removed from service by 22 December 1998 (40 CFR 280.21(a) through 280.21(c)).
- New or Upgraded USTs - New or upgraded USTs are required to be fitted with spill and overfill prevention equipment. Notice must be given to the appropriate authority within 30 days when a UST system is brought into service after 8 May 1986. If the UST is installed after 22 December 1988, it must be constructed so that it will remain structurally sound for its operating life. Installation of USTs must be done by a certified installer and UST systems must be made of or lined with, materials compatible with the substance stored (40 CFR 280.20, 280.21(d), 280.22, and 280.32).
- Metallic USTs - Buried metallic storage tanks installed after 1973 must be protected from corrosion by coatings, cathodic protection, or other effective methods. They must also undergo regular pressure testing (40 CFR 112.7(e)(2)(iv)).
- Spill and Overfill Prevention - The filling of a UST must include the prevention of overfilling and spilling of the substance. If a spill does occur, facilities with UST systems are required to contain and immediately cleanup a spill or overfill and report it to the implementing agency within 24 h if (40 CFR 280.30 and 280.53):
  1. spills or overfills of petroleum resulted in a release to the environment of more than 25 gal [93.89 L] or caused a sheen on nearby surface water
  2. spills or overfills of hazardous substances result in a release to the environment in excess of the reportable quantity.
- Corrosion Protection and Repairs - Corrosion protection on USTs must operate continuously to provide corrosion protection to the metal components that routinely contain regulated substances and are in contact with the ground. UST systems with impressed current cathodic protection are required to be inspected every 60 days by a qualified cathodic protection tester. Repairs to USTs must be performed according to industry code. Tanks and piping that have been replaced or repaired are required to be tested for tightness within 30 days. Records of repairs shall be maintained for the life of the tank (40 CFR 280.31, 280.33, 280.43, and 280.44).
- Release Detection - Facilities with new and existing USTs are required to provide a method, or combination of methods of release detection. Release detection requirements in 40 CFR 280.40 through 280.45 do not apply to USTs which store fuel solely for use by emergency power generators. Release detection records are required to be kept as follows (40 CFR 280.40 through 280.45):
  1. all written performance claims pertaining to any release detection system used for 5 yr from the date of installation
  2. the results of any sampling testing or monitoring for 1 yr
  3. the results of tank tightness testing, until the next test is done
  4. written documentation of calibration, maintenance, repair, of release detection equipment permanently located onsite, at least 1 yr after the servicing is done
  5. schedules of required calibration and maintenance provided by the release detection equipment manufacturer, 5 yr after the date of installation.

Depending on the age, size, and construction of the tank, acceptable methods of release detection include the following:

1. inventory control
2. manual tank gauging
3. tank tightness testing
4. automatic tank gauging
5. vapor monitoring
6. groundwater monitoring
7. interstitial monitoring.

Existing UST system tanks must implement release detection requirements based on when the system was installed. The table below identifies the deadline for providing release detection:

UST System Installation Date	Leak Detection Required by 22 December of:
All others	1992
1980-December 1988	1993

- Release Detection for Underground Piping Associated with UST Systems - 40 CFR 280, Subpart D, establishes separate release detection requirements for underground piping depending on whether it conveys substances under pressure or suction. These include:
  1. Pressurized piping must be equipped with an automatic line leak detector and have an annual line tightness test conducted; or pressurized piping must be equipped with an automatic line leak detector and a permanent release detection system that allows monthly monitoring. Permanent release detection methods acceptable for piping include: vapor monitoring, interstitial monitoring, and groundwater monitoring. The deadline for implementing release detection requirements on pressurized piping is 22 December 1990.
  2. Suction piping either must have a line tightness test conducted every 3 yr or must use a permanent release detection system that allows monthly monitoring. Deadlines for implementing release detection requirements on suction piping are based on when the UST system was installed. The table above identifies the deadline for providing release detection. For suction piping constructed to certain standards, no release detection monitoring is required. It must meet five criteria:
    - a. belowgrade piping must operate at less than atmospheric pressure
    - b. belowgrade piping must be sloped to drain back into the tank when suction is released
    - c. only one check valve can be included in each suction line
    - d. check valve shall be located directly below and as close as practical to the suction pump
    - e. criteria in paragraphs b through d must be verifiable.
- Hazardous Substance USTs - Existing hazardous substance USTs are required to meet release detection standards for petroleum USTs (40 CFR 280.42).

- **Reporting and Recordkeeping Requirements** - Facilities are required to submit notifications of new USTs, release reports, planned or complete corrective actions, and notice of closure or change-in-service when applicable. Records are required to be available at the UST site or at a readily available alternative site. Records are to be kept of the following (40 CFR 280.34 280.45, and 280.74):
  1. corrosion expert's analysis of site corrosion potential if corrosion protection equipment is not used
  2. documentation of operation of corrosion protection equipment
  3. documentation of repairs
  4. closure records
  5. results of any site investigations.
- **Change-in-Service or Closure of USTs** - USTs which are put out of service temporarily must have continued maintenance. If the UST has been out-of-service for near or over 1 yr, plans must be made for permanent closure. The facility must notify the implementing agency (USEPA) for any closure or change-in-service 30 days in advance or within a reasonable time frame as determined by the implementing agency. UST closure must be done by either removing the tank from the ground or leaving it in place with the contents removed and the tank filled with an inert solid material and closing it to all future outside access. If a tank is undergoing a change-in-service, it must be emptied and cleaned and a site assessment conducted. Prior to the completion of permanent closure or change-in-service, measurements must be made for the presence of a release where contamination is most likely to be present at the site. Facilities with UST systems closed prior to 22 December 1988 must, when directed by the implementing agency, assess the excavation zone and close the UST according to current standards if releases from the UST may pose a current or potential threat to human health and the environment (40 CFR 280.70 through 280.73).
- **Recordkeeping** - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

#### **F. Key Compliance Definitions**

- **Aboveground Release** - any release to the surface of the land or to surface water. This includes, but is not limited to, releases from the aboveground portion of a UST system and aboveground releases associated with overfills and transfer operations as the regulated substance moves to or from a UST system (40 CFR 280.12).
- **Ancillary Equipment** - any devices including, but not limited to, such devices as pipings, fittings, flanges, valves, and pumps used to distribute, meter, or control the flow of regulated substances to and from the UST (40 CFR 280.12).
- **Belowground Release** - any release to the subsurface of the land and to groundwater. This includes, but is not limited to, releases from the belowground portion of a UST system and belowground releases associated with overfills and transfer operations as the regulated substance moves to or from a UST (40 CFR 280.12).

- *Cathodic Protection* - a technique to prevent corrosion of a metal surface by making that surface the cathode of an electrochemical cell. For example, a tank system can be cathodically protected through the application of either galvanic anodes or impressed current (40 CFR 280.12).
- *Cathodic Protection Tester* - a person who can demonstrate understanding of the principles and measurements of all common types of cathodic protection systems as applied to buried or submerged metal piping and tank systems. At a minimum, such persons must have education and experience in soil resistivity, stray current, structure-to-soil potential, and component electrical isolation measurements of buried metal piping and tank systems (40 CFR 280.12).
- *CERCLA - Comprehensive Environmental Response Compensation and Liability Act* of 1980 as amended (40 CFR 280.12).
- *Compatible* - the ability of two or more substances to maintain their respective physical and chemical properties upon contact with one another for the design life of the tank system under conditions likely to be encountered in the UST (40 CFR 280.12).
- *Connected Piping* - all underground piping including valves, elbows, joints, flanges, and flexible connectors attached to a tank system through which regulated substances flow. For the purpose of determining how much piping is connected to any individual UST system, the piping that joins two UST systems should be allocated equally between them (40 CFR 280.12).
- *Consumptive Use* - with respect to heating oil means consumed on the premises (40 CFR 280.12).
- *Corrosion Expert* - a person who, by reason of thorough knowledge of the physical sciences and the principles of engineering and mathematics acquired by a professional education and related practical experience, is qualified to engage in the practice of corrosion control on buried or submerged metal piping systems and metal tanks. Such a person must be accredited or certified as being qualified by the National Association of Corrosion Engineers or be a registered professional engineer who has certification or licensing that includes education and experience in corrosion control of buried or submerged metal piping systems and metal tanks (40 CFR 280.12).
- *Deferred USTs* - USTs which are exempt from meeting the requirements in 40 CFR 280 except those concerning release response and corrective action for UST systems containing petroleum or hazardous substances in 40 CFR 280.60 through 280.67. These tanks include (40 CFR 280.10(e):
  1. wastewater treatment tank systems
  2. any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954
  3. any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A
  4. airport hydrant fuel distribution systems
  5. UST system with field-constructed tanks.
 See also the definitions for USTs and Excluded USTs.

- *Dielectric Material* - a material that does not conduct direct electrical current. Dielectric coatings are used to electrically isolate UST systems from the surrounding soils. Dielectric bushings are used to electrically isolate portions of the UST system (e.g., tank from piping) (40 CFR 280.12).
- *Electrical Equipment* - underground equipment that contains dielectric fluid that is necessary for the operation of equipment such as transformers and buried electric cable (40 CFR 280.12).
- *Excavation Zone* - the volume containing the tank system and backfill material bounded by the ground surface, walls, and floor of the pit and trenches into which the UST system is placed at the time of installation (40 CFR 280.12).
- *Excluded USTs* - these are USTs which are not required to meet the requirements found in 40 CFR 280 and include (40 CFR 280.10(b)):
  1. any UST system holding hazardous wastes listed under Subtitle C of the *Solid Waste Disposal Act* (SWDA), or a mixture of such hazardous waste and other regulated substances
  2. any wastewater treatment tank system that is part of a wastewater treatment facility regulated under Section 402 or 307(b) of the *Clean Water Act* (CWA)
  3. equipment or machinery that contains regulated substances for operational purposes such as hydraulic lift tanks and electrical equipment
  4. any UST system whose capacity is 110 gal [416.40 L] or less
  5. any UST system that contains a de minimis concentration of a regulated substance
  6. any emergency spill or overflow containment UST system that is expeditiously emptied after use.

See also the definitions for Deferred USTs and USTs.

- *Existing Tank System* - a tank system used to contain an accumulation of regulated substances or for which installation has commenced on or before 22 December 1988. Installation is considered to have commenced if (40 CFR 280.12):
  1. the owner or operator has obtained all Federal, state, and local approvals or permits necessary to begin physical construction of the site or installation of the tank system
  2. a. either a continuous onsite physical construction or installation program has begun
    - b. or the owner or operator has entered into any contractual obligations:
      1. which cannot be canceled or modified without substantial loss
      2. for physical construction at the site or installation of the tank system to be completed within a reasonable time.
- *Farm Tank* - a tank located on a tract of land devoted to the production of crops or raising animals, including fish, and associated residences and improvements. A farm tank must be located on the farm property. Farm includes fish hatcheries, rangeland, and nurseries with growing operations (40 CFR 280.12).
- *Flow-Through Process Tank* - a tank that forms an integral part of a production process through which there is a steady, variable, recurring, or intermittent flow of materials during the operation of the process. Flow-through process tanks do not include tanks used for the storage of material prior to their introduction into the production process or for the storage of finished products or by-products from the production (40 CFR 280.12).

- *Free-Product* - a regulated substance that is present as a nonaqueous phase liquid (e.g., liquid not dissolved in water) (40 CFR 280.12).
- *Gathering Lines* - any pipeline, equipment, facility, or building used in the transportation of oil or gas during oil or gas production (40 CFR 280.12).
- *Hazardous Substance UST System* - any UST system that contains a hazardous substance defined in section 101(14) of the CERCLA (but not including any substance regulated as a hazardous waste under subtitle C) or any mixture of such substances and petroleum, and which is not a petroleum UST system (40 CFR 280.12).
- *Heating Oil* - petroleum that is No. 1, No. 2, No. 4--light, No. 4--heavy, No. 5 --heavy, and No. 6 technical grades of fuel oil; other residual fuel oils (including Navy Special Fuel Oil and Bunker C); and other fuels when used as substitutes for one of these fuel oils. Heating oil is typically used in the operation of heating equipment, boilers, or furnaces (40 CFR 280.12).
- *Hydraulic Lift Tank* - a tank holding hydraulic fluid for a closed-loop mechanical system that uses compressed air or hydraulic fluid to operate lifts, elevators, and other similar devices (40 CFR 280.12).
- *Liquid Trap* - sumps, well cellars, and other traps used in association with oil and gas production, gathering, and extracting operations (including gas production plants), for the purpose of collecting oil, water, and other liquids. These liquid traps may temporarily collect liquids for subsequent disposition or reinjection into a production or pipeline stream, or may collect and separate liquids from a gas stream (40 CFR 280.12).
- *Maintenance* - the normal operational upkeep to prevent a UST system from releasing product (40 CFR 280.12).
- *Management Practice (MP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- *Motor Fuel* - petroleum or a petroleum-based substance that is motor gasoline, aviation gasoline, No. 1 or No. 2 diesel fuel, or any grade of gasohol, and is typically used in the operation of motor engines (40 CFR 280.12).
- *New Tank System* - a tank system that will be used to contain an accumulation of regulated substances and for which installation has commenced after 22 December 1988 (40 CFR 280.12).
- *Noncommercial Purposes with Respect to Motor Fuel* - not for resale (40 CFR 280.12).
- *On the Premises Where Stored (heating oil)* - UST systems located on the same property where the stored heating oil is used (40 CFR 280.12).
- *Operator* - any person in control of or having responsibility for the daily operation of the UST system (40 CFR 280.12).

- *Overfill Release* - a release that occurs when a tank is filled beyond its capacity, resulting in a discharge of the regulated substance to the environment (40 CFR 280.12).
- *Person* - an individual, trust, firm, joint stock company, Federal agency, corporation, state, municipality, commission, political subdivision of a state, or any interstate body. Person also includes a consortium, a joint venture, a commercial entity, and the U.S. Government (40 CFR 280.12).
- *Petroleum UST System* - a UST system that contains petroleum or a mixture of petroleum with *de minimis* quantities of other regulated substances. Such systems include those containing motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents, and used oils (40 CFR 280.12).
- *Pipe or Piping* - a hollow cylinder or tubular conduit that is constructed of nonearthen materials (40 CFR 280.12).
- *Pipeline Facilities* - (including gathering lines) are new and existing pipe rights-of-way and any associated equipment, facilities, or buildings (40 CFR 280.12).
- *Regulated Substance (40 CFR 280.12)* -
  1. any substance defined in section 101(14) of the CERCLA of 1980 (but not including any substance regulated as a hazardous waste under subtitle C)
  2. petroleum, including crude oil or any fraction thereof that is liquid at standard conditions of temperature and pressure (60 °F [15.56 °C] and 14.7 lb/psia).

(NOTE: The term regulated substance includes, but is not limited to, petroleum and petroleum based substances comprised of a complex blend of hydrocarbons derived from crude oil through processes of separation, conversion, upgrading, and finishing, such as motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents, and used oils.)

- *Release* - any spilling, leaking, emitting, discharging, escaping, leaching, or disposing from a UST into groundwater, surface water, or subsurface soils (40 CFR 280.12).
- *Release Detection* - determining whether a release of a regulated substance has occurred from the UST system into the environment or into the interstitial space between the UST system and its secondary barrier or secondary containment around it (40 CFR 280.12).
- *Repair* - to restore a tank or UST system component that has caused a release of product from the UST system (40 CFR 280.12).
- *Residential Tank* - a tank located on property used primarily for dwelling purposes (40 CFR 280.12).
- *SARA - Superfund Amendments and Reauthorization Act* (40 CFR 280.12).



- *Septic Tank* - a water-tight covered receptacle designed to receive or process, through liquid separation or biological digestion, the sewage discharged from a building sewer. The effluent from such receptacle is distributed through the soil and settled solids and scum from the tank are pumped out periodically and hauled to a treatment facility (40 CFR 280.12).
- *Stormwater or Wastewater Collection System* - piping, pumps, conduits, and any other equipment necessary to collect and transport the flow of surface water runoff resulting from precipitation, or domestic, commercial, or industrial wastewater to and from retention areas or any areas where treatment is designated to occur. The collection of stormwater and wastewater does not include treatment except where incidental to conveyance (40 CFR 280.12).
- *Surface Impoundment* - a natural topographic depression, manmade excavation, or diked area formed primarily of earthen materials (although may be lined with manmade materials) that is not an injection well (40 CFR 280.12).
- *Tank* - a stationary device designed to contain an accumulation of regulated substances and constructed of nonearthen materials (e.g., concrete, steel, plastic) that provide structural support (40 CFR 280.12).
- *Underground Area* - an underground room such as a basement, cellar, shaft, or vault, providing enough space for physical inspection of the exterior of the tank situated on or above the surface of the floor (40 CFR 280.12).
- *Underground Release* - any below ground release (40 CFR 280.12).
- *Underground Storage Tank (UST)* - any one or a combination of tanks (including underground pipes connected thereto) that is used to contain an accumulation of regulated substances, and the volume of which (including the volume of underground pipes connected thereto) is 10 percent or more beneath the surface of the ground. This term does not include any (40 CFR 280.12):
  1. farm or residential tank of 1100 gal [4163.95 L] or less capacity used for storing motor fuel for noncommercial purposes
  2. tank used for storing heating oil for consumptive use on the premises where stored
  3. septic tanks
  4. pipeline facility (including gathering lines) which are regulated by other Acts
  5. surface impoundment, pit, pond, or lagoon
  6. stormwater or waste water collection system
  7. flow-through process tank
  8. liquid trap or associated gathering lines directly related to oil or gas production and gathering operations
  9. storage tank situated in an underground area if the storage tank is situated upon or above the surface of the floor such as basements or tunnels
  10. tanks holding 110 gal [416.40 L] or less
  11. emergency spill and overfill tanks.

(NOTE: The definition of UST does not include any pipes connected to any tank which is described in para (1) through (9) of this definition. Also refer to the definition for Deferred UST and Excluded UST.)

- *Upgrade* - the addition or retrofit of some systems such as cathodic protection, lining, or spill and overfill controls to improve the ability of a UST system to prevent the release of product (40 CFR 280.12).
- *UST System or Tank System* - UST, connected underground piping, underground ancillary equipment, and containment system, if any (40 CFR 280.12).
- *Wastewater Treatment Tank* - a tank that is designed to receive and treat influent waste water through physical, chemical, or biological methods (40 CFR 280.12).

## UNDERGROUND STORAGE TANK (UST) MANAGEMENT

### GUIDANCE FOR CHECKLIST USERS

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Changes-in-Service or Closure of USTs	9-31 through 9-37	9-51

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## **UNDERGROUNDS STORAGE TANK (UST) MANAGEMENT**

### **Records To Review**

- Records of all spills, leaks, and associated site assessment/cleanup activities (for 3 yr)
- Official correspondence with state implementing agency
- Spill Prevention and Response Plan
- Records of spill response training programs
- Results of all UST testing, sampling, monitoring, inspection, maintenance, and repair work (for 1 yr)
- Registration records for all in-service, temporarily out-of-service, and permanently closed tanks
- Records of all spills, leaks, and associated site assessment/cleanup activities (for 3 yr)
- Records for UST disposal, closure, and removal from activity and results of excavation area assessment (for 3 yr)

### **Physical Features To Inspect**

- Refueling facilities, including:
  - Belowground storage tanks and dikes
  - Venting
  - Fill pipe
  - Gauges
  - Vehicle Maintenance areas
- Oil and Hazardous Substance Site
- Any site with a UST



**COMPLIANCE CATEGORY:  
UNDERGROUND STORAGE TANK (UST) MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>ALL FACILITIES</b></p> <p><b>9-1.</b> The current status of any ongoing or unresolved consent orders, compliance agreements, notices of violation (NOVs), inter-agency agreements, or equivalent state enforcement actions is required to be examined (a finding under this checklist item will have the enforcement action/identifying information as the citation).</p> <p><b>9-2.</b> FWS facilities are required to comply with state and local regulations (EO 12088, Section 1-1).</p> <p><b>9-3.</b> Facilities will meet regulatory requirements issued since the finalization of the handbook (a finding under this checklist item will have the citation of the new regulation as a basis of finding).</p>	<p>Determine if noncompliance issues have been resolved by reviewing a copy of the previous report, consent orders, compliance agreements, NOVs, inter-agency agreements, or equivalent state enforcement actions.</p> <p>(NOTE: Some FWS USTs fall under the definition of a farm tank and are exempted from the requirements of 40 CFR 280.)</p> <p>Verify that the facility is complying with state and local requirements.</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies.</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- operational standards</li> <li>- permitting requirements</li> <li>- replacement and removal schedules</li> <li>- cathodic protection requirements</li> <li>- alarm system requirements.)</li> </ul> <p>Determine if any new regulations concerning UST have been issued since the finalization of the handbook.</p> <p>Verify that the facility is in compliance with newly issued regulations.</p>

**COMPLIANCE CATEGORY:**  
**UNDERGROUND STORAGE TANK (UST) MANAGEMENT**  
**Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**9-4.** FWS facilities should report all NOV's to the Region and the Service Pollution Control Office (SPCO) (MP).

**REVIEWER CHECKS:**  
**July 1995**

Determine if the facility has received an NOV relating to UST management.  
Verify that the NOV was reported to the Region and the SPCO.



**COMPLIANCE CATEGORY:**  
**UNDERGROUND STORAGE TANK (UST) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>SUBSTANDARD USTs</b></p> <p><b>9-5.</b> Substandard UST systems are required to be upgraded, closed, or removed from service by 22 December 1998 (40 CFR 280.10(c), 280.21(a) through 280.21(c)).</p>	<p>(NOTE: See Appendix 9-1 for guidance on applicability of checklist items.)</p> <p>(NOTE: If a release detection system is not available for the UST, it must be phased out in 1 to 5 yr.)</p> <p>Determine if there are currently any plans for upgrading or decommissioning a substandard UST.</p> <p>Verify that upgrading of steel USTs includes one of the following methods:</p> <ul style="list-style-type: none"> <li>- internal lining according to the following requirements: <ul style="list-style-type: none"> <li>- lining is installed so that it prevents releases due to structural failure or corrosion and meets a recognized code of practice</li> <li>- within 10 yr after installation of lining, and every 5 yr thereafter, the lined tank is inspected internally and found to be structurally sound, with the lining still performing in accordance with original design specifications</li> </ul> </li> <li>- cathodic protection with field-installed systems designed by an expert, impressed current systems, or an approved equivalent system and the integrity is assured by one of the following: <ul style="list-style-type: none"> <li>- tank is internally inspected and assessed to ensure that the tank is structurally sound and free of corrosion</li> <li>- the tank has been installed for less than 10 yr and is monitored monthly for releases</li> <li>- the tank has been installed for less than 10 yr and is assessed for corrosion holes by conducting two tightness tests, one before and one 3 to 6 mo after installation of the cathodic protection system</li> <li>- tank is assessed for corrosion holes by a method that is determined to be equally protective by the implementing agency</li> </ul> </li> <li>- lining combined with cathodic protection: <ul style="list-style-type: none"> <li>- if lining is installed according to requirements</li> <li>- if cathodic protection system meets requirements.</li> </ul> </li> </ul> <p>Verify that, when spill and overfill equipment is added, the tank meets the same standards as new USTs.</p> <p>Verify that piping that routinely contains regulated substances and is in contact with the ground is cathodically protected.</p>

**COMPLIANCE CATEGORY:**  
**UNDERGROUND STORAGE TANK (UST) MANAGEMENT**  
**Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**  
**July 1995**

**9-5. (continued)**

(NOTE: The following types of USTs are not subject to these requirements:

- wastewater treatment tank systems
- any UST systems containing radioactive material that are regulated under the Atomic Energy Act of 1954
- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A
- airport hydrant fuel distribution systems
- UST system with field-constructed tanks.)

<b>COMPLIANCE CATEGORY:</b> <b>UNDERGROUND STORAGE TANK (UST) MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<b>NEW OR UPGRADED USTs</b>  <b>9-6.</b> New or upgraded USTs are required to be fitted with spill and overfill prevention equipment (40 CFR 280.10(c), 280.20(c), and 280.21(d)).	<p>Verify that spill prevention equipment will prevent a release of product to the environment when the transfer hose is detached from the fill pipe.</p> <p>Verify that overfill prevention equipment does one of the following:</p> <ul style="list-style-type: none"> <li>- automatically shuts off flow into the tank when the tank is no more than 95 percent full</li> <li>- alerts the transfer operator when the tank is no more than 90 percent full by restricting the flow into the tank or triggering a high-level alarm</li> <li>- restrict flow 30 min prior to overfilling, alert the operator with a high-level alarm 1 min before overfilling, or automatically shut off flow into the tank so that none of the fittings are exposed to product due to overfilling.</li> </ul> <p>(NOTE: This equipment is not required if approved equivalent equipment is used or the UST system is filled by transfers of no more than 25 gal [94.64 L] at one time.)</p> <p>(NOTE: All existing tanks must be upgraded by 1998. The state may have a sooner deadline.)</p> <p>(NOTE: The following types of USTs are not subject to these requirements:</p> <ul style="list-style-type: none"> <li>- wastewater treatment tank systems</li> <li>- any UST systems containing radioactive material that are regulated under the <i>Atomic Energy Act</i> of 1954</li> <li>- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A</li> <li>- airport hydrant fuel distribution systems</li> <li>- UST system with field-constructed tanks.)</li> </ul>
<b>9-7.</b> Notice must be given within 30 days when a UST system is brought into service after 8 May 1986 (40 CFR 280.10(c) and 280.22).	<p>Determine if the facility has brought any USTs into service after 8 May 1986.</p> <p>Verify that the appropriate notification was issued.</p> <p>(NOTE: State forms may be used for notification in lieu of an USEPA form 7530. These notices must be sent to the appropriate agency.)</p>

**COMPLIANCE CATEGORY:**  
**UNDERGROUND STORAGE TANK (UST) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
9-7. (continued)	<p>(NOTE: The following types of USTs are not subject to these requirements:</p> <ul style="list-style-type: none"> <li>- wastewater treatment tank systems</li> <li>- any UST systems containing radioactive material that are regulated under the Atomic Energy Act of 1954</li> <li>- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A</li> <li>- airport hydrant fuel distribution systems</li> <li>- UST system with field-constructed tanks.)</li> </ul>
<p>9-8. UST systems installed after 22 December 1988 must be constructed in such a manner that they will remain structurally sound for their operating life (40 CFR 280.10(c), 280.20(a), and 280.20(b)).</p>	<p>Verify that USTs conform to industry standards by reviewing records.</p> <p>Verify that USTs meet the following:</p> <ul style="list-style-type: none"> <li>- they have leak/spill prevention protection</li> <li>- the tank is constructed of one of the following materials: <ul style="list-style-type: none"> <li>- fiberglass-reinforced plastic</li> <li>- steel which has one of the following types of cathodic protection: <ul style="list-style-type: none"> <li>- coated with a suitable dielectric material</li> <li>- field installed cathodic protection (expert installed)</li> <li>- impressed current systems which allow determination of current operating status</li> </ul> </li> <li>- steel-fiberglass-reinforced-plastic composite</li> <li>- metal without additional corrosion protection provided that: <ul style="list-style-type: none"> <li>- the site has been determined, by a corrosion expert, not to cause corrosion to the tank</li> <li>- records are maintained for the life of the tank that it is in a corrosion free environment</li> </ul> </li> </ul> </li> <li>- construction is in a manner that is deemed to prevent release of the regulated substance.</li> </ul> <p>(NOTE: Piping must also meet these criteria with the exception of not being constructed of steel-fiberglass-reinforced-plastic composite.)</p> <p>(NOTE: The following types of USTs are not subject to these requirements:</p> <ul style="list-style-type: none"> <li>- wastewater treatment tank systems</li> <li>- any UST systems containing radioactive material that are regulated under the <i>Atomic Energy Act</i> of 1954</li> <li>- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A</li> <li>- airport hydrant fuel distribution systems</li> <li>- UST system with field-constructed tanks.)</li> </ul>

**COMPLIANCE CATEGORY:**  
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**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>9-9.</b> Installation of UST must certified installer and done according to standard practices (40 CFR 280.10(c), 280.20(d), and 280.20(e)).</p>	<p>Determine if new UST systems have been properly installed by reviewing records for certification.</p> <p>Verify that if, the facility does its own installation of USTs, the installation is done according to standard practices.</p> <p>(NOTE: The following types of USTs are not subject to these requirements:</p> <ul style="list-style-type: none"> <li>- wastewater treatment tank systems</li> <li>- any UST systems containing radioactive material that are regulated under the <i>Atomic Energy Act</i> of 1954</li> <li>- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A</li> <li>- airport hydrant fuel distribution systems</li> <li>- UST system with field-constructed tanks.)</li> </ul>
<p><b>9-10.</b> Facilities are required to use UST systems made of or lined with materials compatible with the substance stored (40 CFR 280.10(c) and 280.32).</p>	<p>Verify that the substances stored in UST systems are compatible with the system.</p> <p>Determine which USTs are being used to store a substance other than that for which it was originally intended.</p> <p>(NOTE: The following types of USTs are not subject to these requirements:</p> <ul style="list-style-type: none"> <li>- wastewater treatment tank systems</li> <li>- any UST systems containing radioactive material that are regulated under the <i>Atomic Energy Act</i> of 1954</li> <li>- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A</li> <li>- airport hydrant fuel distribution systems</li> <li>- UST system with field-constructed tanks.)</li> </ul>



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**METALLIC USTs**

**9-11.** Buried metallic storage tanks installed after 1973 must be protected from corrosion by coatings, cathodic protection, or other effective methods (40 CFR 112.7(e)(2)(iv)).

Verify that new USTs are appropriately protected from corrosion by inspecting records and interviewing personnel.

Verify that the tanks are pressure tested regularly.

(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:

- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows:
  - onshore and offshore sites which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines
  - equipment or operations of vessels or transportation related onshore and offshore sites which are subject to the authority of the DOT.
- the facility, which although otherwise subject to USEPA jurisdiction meets both of the following criteria:
  - the underground buried storage capacity of the facility is 42,000 gal [158,987.3 L] or less of oil
  - the storage capacity which is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L] (40 CFR 112.1(d)(2)).





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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>UST FILLING</b></p> <p><b>9-12.</b> The filling of a UST must include the prevention of overfilling and spilling of the substance (40 CFR 280.10(c) and 280.30 (a)).</p> <p><b>9-13.</b> Facilities with UST systems are required to contain and immediately clean up a spill or overfill and report it to the implementing agency within 24 h in specific situations (40 CFR 280.10(c), 280.30(b), and 280.53).</p>	<p>Determine if there is a problem with overfilling of USTs or spills by observing the filling operations, reviewing records, and checking the ground around the fill-lines for visible or odorous indications of contamination.</p> <p>Determine if the level of the UST is checked before a transfer is made and that the volume available in the tank is greater than the volume of the product to be transferred.</p> <p>Verify that fill-lines are capped and locked.</p> <p>Verify that the transfer is monitored constantly.</p> <p>(NOTE: The following types of USTs are not subject to these requirements:</p> <ul style="list-style-type: none"> <li>- wastewater treatment tank systems</li> <li>- any UST systems containing radioactive material that are regulated under the <i>Atomic Energy Act</i> of 1954</li> <li>- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A</li> <li>- airport hydrant fuel distribution systems</li> <li>- UST system with field-constructed tanks.)</li> </ul> <p>Determine if the facility has reported, contained, and cleaned up any and all spills or overfills which met the following criteria:</p> <ul style="list-style-type: none"> <li>- spills or overfills of petroleum that resulted in a release to the environment of more than 25 gal [94.64 L] or that caused a sheen on nearby surface water</li> <li>- spills or overfills of hazardous substances that result in a release to the environment in excess of the reportable quantity (see the Hazardous Materials Management Appendices).</li> </ul> <p>(NOTE: Spills or overfills of hazardous substances to the environment equal to or greater than the reportable quantity must be immediately reported to the National Response Center (NRC).)</p> <p>Verify that the facility has contained and immediately cleaned-up a spill or overfill of petroleum that is less than 25 gal [94.64 L] and a spill or overfill of a hazardous substance that is less than the reportable quantity.</p> <p>Verify that, if cleanup of these lesser quantities cannot be accomplished within 24 h, or another reasonable time period established by the implementing agency, the implementing agency is notified.</p>

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**9-13. (continued)**

(NOTE: The following types of USTs are not subject to these requirements:

- wastewater treatment tank systems
- any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954
- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A
- airport hydrant fuel distribution systems
- UST system with field-constructed tanks.)

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>UST CORROSION PROTECTION</b></p> <p><b>9-14.</b> UST systems with corrosion protection must meet specific requirements (40 CFR 280.10(c) and 280.31).</p>	<p>Determine which UST systems have corrosion protection.</p> <p>Verify that the corrosion protection systems operate continuously to provide corrosion protection to the metal components that routinely contain regulated substances and are in contact with the ground.</p> <p>Verify that all cathodic protection systems are tested within 6 mo after installation and every 3 yr thereafter.</p> <p>Verify that UST systems with impressed current cathodic protection are inspected every 60 days.</p> <p>Verify that inspection records are maintained of the last three inspections for systems with impressed current cathodic protection and of the last two inspections for all other cathodic protection systems.</p> <p>Verify that inspections are carried out by a qualified cathodic protection tester.</p> <p>(NOTE: The following types of USTs are not subject to these requirements:</p> <ul style="list-style-type: none"> <li>- wastewater treatment tank systems</li> <li>- any UST systems containing radioactive material that are regulated under the <i>Atomic Energy Act</i> of 1954</li> <li>- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A</li> <li>- airport hydrant fuel distribution systems</li> <li>- UST system with field-constructed tanks.)</li> </ul>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>UST REPAIRS</b></p> <p><b>9-15.</b> Repairs to USTs must be performed according to industry code (40 CFR 280.10 (c) and 280.33).</p>	<p>Determine if there have been any repairs by reviewing the records and interviewing personnel.</p> <p>Determine who does repairs to USTs and that the following procedures are used to repair USTs:</p> <ul style="list-style-type: none"> <li>- fiberglass reinforced tanks are repaired by the manufacturer's authorized representative or according to industry standards</li> <li>- metal pipe fittings and sections that have leaked due to corrosion are replaced, whereas fiberglass may be repaired according to manufacturer's specifications.</li> </ul> <p>Verify that tanks and piping that have been replaced or repaired are tested for tightness within 30 days.</p> <p>(NOTE: Tanks and piping need not be tested if:</p> <ul style="list-style-type: none"> <li>- repairs are internally inspected</li> <li>- the repaired portion is already monitored monthly</li> <li>- an equally protective test is used.)</li> </ul> <p>Verify that within 6 mo of repair, tanks with cathodic protection systems are tested as follows:</p> <ul style="list-style-type: none"> <li>- every 3 yr thereafter for all cathodic protection systems</li> <li>- every 60 days for impressed current cathodic protection systems.</li> </ul> <p>Verify that records of repairs are maintained for the life of the tank.</p> <p>(NOTE: The following types of USTs are not subject to these requirements:</p> <ul style="list-style-type: none"> <li>- wastewater treatment tank systems</li> <li>- any UST systems containing radioactive material that are regulated under the <i>Atomic Energy Act</i> of 1954</li> <li>- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A</li> <li>- airport hydrant fuel distribution systems</li> <li>- UST system with field-constructed tanks.)</li> </ul>



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**RELEASE  
DETECTION FOR  
USTs**

**General**

**9-16.** Facilities with new and existing USTs are required to provide a method, or combination of methods of release detection (40 CFR 280.10(c), 280.10 (d), and 280.40).

Verify that the installed release detection system can detect a release from any portion of the tank and the connected underground piping.

Verify that the appropriate schedule has been complied with (see Appendix 9-2).

(NOTE: Any pressurized delivery lines must be retrofitted by 22 December 1990.)

(NOTE: The following types of USTs are not subject to these requirements:

- wastewater treatment tank systems
- any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954
- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A
- airport hydrant fuel distribution systems
- UST system with field-constructed tanks
- UST system that stores fuel solely for use by emergency power generator.)





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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS: July 1995</b>
<p><b>RELEASE DETECTION FOR USTs</b></p> <p><b>Petroleum USTs</b></p> <p><b>9-17.</b> UST systems containing petroleum must meet specific release detection system requirements (40 CFR 280.10(c), 280.10(d), 280.40, 280.41, 280.43, and 280.44).</p>	<p>Verify that tanks are monitored every 30 days using one of the following methods (details of methods are provided in Appendix 9-3):</p> <ul style="list-style-type: none"> <li>- tank automatic gauging</li> <li>- vapor monitoring</li> <li>- groundwater monitoring</li> <li>- interstitial monitoring</li> <li>- other acceptable methods.</li> </ul> <p>(NOTE: The following are exceptions:</p> <ul style="list-style-type: none"> <li>- UST systems which meet performance standards for new or upgraded systems and monthly inventory requirements may use tank tightness testing at least every 5 yr until 22 December 1998 or until 10 yr after the tank is upgraded or installed</li> <li>- UST systems which do not meet performance standards for new or upgraded systems, may use monthly inventory controls and annual tank tightness testing until 22 December 1998, at which time the tank must be upgraded or permanently closed</li> <li>- tanks which hold less than 550 gal [2081.98 L] may use weekly tank gauging.)</li> </ul> <p>Verify that underground piping which routinely contains a regulated substance has the following release detection done as described in Appendix 9-3:</p> <ul style="list-style-type: none"> <li>- pressurized piping: <ul style="list-style-type: none"> <li>- equipped with automatic line leak detector</li> <li>- annual tightness testing or monthly monitoring.</li> </ul> </li> <li>- suction piping: <ul style="list-style-type: none"> <li>- line tightness testing every 3 yr or monthly monitoring</li> <li>- no release detection system is needed for suction piping which is below grade and: <ul style="list-style-type: none"> <li>- operates at less than atmospheric pressure</li> <li>- is sloped so that contents of pipe will roll back to tank when suction is released</li> <li>- only one check valve is included in each suction line</li> <li>- the check valve is located directly below and as close as practical to the suction pump.</li> </ul> </li> </ul> </li> </ul>

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**9-17. (continued)**

(NOTE: The following types of USTs are not subject to these requirements:

- wastewater treatment tank systems
- any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954
- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A
- airport hydrant fuel distribution systems
- UST system with field-constructed tanks
- UST system that stores fuel solely for use by emergency power generator.)

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>RELEASE DETECTION FOR USTs</b></p> <p><b>Hazardous Substance USTs</b></p> <p><b>9-18.</b> Hazardous substance USTs must meet specific release detection standards (40 CFR 280.10(c), 280.10(d), 280.42(a), 280.43, and 280.44).</p>	<p>Verify that tanks are monitored every 30 days using one of the following methods (details of methods are provided in Appendix 9-3):</p> <ul style="list-style-type: none"> <li>- tank automatic gauging</li> <li>- vapor monitoring</li> <li>- groundwater monitoring</li> <li>- interstitial monitoring</li> <li>- other acceptable methods.</li> </ul> <p>(NOTE: The following are exceptions:</p> <ul style="list-style-type: none"> <li>- UST systems which meet performance standards for new or upgraded systems and monthly inventory requirements may use tank tightness testing at least every 5 yr until 22 December 1998 or until 10 yr after the tank is upgraded or installed</li> <li>- UST systems which do not meet performance standards for new or upgraded systems may use monthly inventory controls and annual tank tightness testing until 22 December 1998, at which time the tank must be upgraded or permanently closed</li> <li>- tanks which hold less than 550 gal [2081.98 L] may use weekly tank gauging.)</li> </ul> <p>Verify that underground piping which routinely contains a regulated substance has the following release detection done as described in Appendix 9-3:</p> <ul style="list-style-type: none"> <li>- pressurized piping: <ul style="list-style-type: none"> <li>- equipped with automatic line leak detector</li> <li>- annual tightness testing or monthly monitoring</li> </ul> </li> <li>- suction piping: <ul style="list-style-type: none"> <li>- line tightness testing every 3 yr or monthly monitoring</li> <li>- no release detection system is needed for suction piping which is below grade and: <ul style="list-style-type: none"> <li>- operates at less than atmospheric pressure</li> <li>- is sloped so that contents of pipe will roll back to tank when suction is released</li> <li>- only one check valve is included in each suction line</li> <li>- the check valve is located directly below and as close as practical to the suction pump.</li> </ul> </li> </ul> </li> </ul>

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**Fish and Wildlife Service**

**REGULATORY REQUIREMENTS:**

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**9-18. (continued)**

(NOTE: The following types of USTs are not subject to these requirements:

- wastewater treatment tank systems
- any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954
- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A
- airport hydrant fuel distribution systems
- UST system with field-constructed tanks
- UST system that stores fuel solely for use by emergency power generator.)

**9-19.** Hazardous substance USTs must meet specific release detection standards by 22 December 1998 (40 CFR 280.10(c), 280.10(d), 280.42(b), 280.43, and 280.44).

Verify that existing hazardous substance USTs meet the requirements for new hazardous substance USTs by 22 December 1998 as stated below:

- secondary containment is checked for evidence of a release at least every 30 days and is designed and constructed to:
  - contain regulated substances released until they are detected and removed
  - prevent releases of regulated substances to the environment at any time during the operational life of the UST
- double-walled tanks are designed, constructed, and installed to:
  - contain releases from any portion of the inner tank within the outer-wall
  - detect failure of the inner wall
- external liners, including vaults, are designed, constructed, and installed in such a manner that:
  - 100 percent of the capacity of the largest tank is contained within its boundary
  - the interference of precipitation or groundwater intrusion is prevented with the ability to contain or detect release of regulated substances
  - the tank is completely surrounded.

Verify that underground piping is equipped with secondary containment which satisfies the requirements for UST secondary containment.

Verify that piping which delivers regulated substances under pressure is equipped with an automatic line leak detector.

Verify that when other release detection methods are used, they are approved by the implementing agency.

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**9-19. (continued)**

(NOTE: The following types of USTs are not subject to these requirements:

- wastewater treatment tank systems
- any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954
- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A
- airport hydrant fuel distribution systems
- UST system with field-constructed tanks
- UST system that stores fuel solely for use by emergency power generator.)



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<p><b>RELEASE DETECTION FOR USTs</b></p> <p><b>Exempted USTs</b></p> <p>9-20. UST systems containing fuel used solely for emergency generators should meet specific release detection system requirements (MP).</p>	<p>(NOTE: The checklist items in this portion apply to the following USTs:</p> <ul style="list-style-type: none"> <li>- wastewater treatment tank systems</li> <li>- any UST systems containing radioactive material that are regulated under the <i>Atomic Energy Act</i> of 1954</li> <li>- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A</li> <li>- airport hydrant fuel distribution systems</li> <li>- UST system with field-constructed tanks</li> <li>- UST system that stores fuel solely for use by emergency power generator.)</li> </ul> <p>Verify that tanks are monitored every 30 days using the method in Appendix 9-3 except for:</p> <ul style="list-style-type: none"> <li>- UST systems which meet performance standards for new or upgraded systems and monthly inventory requirements may use tank tightness testing at least every 5 yr until 22 December 1998 or until 10 yr after the tank is upgraded or installed</li> <li>- UST systems which do not meet performance standards for new or upgraded systems may use monthly inventory controls and annual tank tightness testing until 22 December 1998, at which time the tank must be upgraded or permanently closed</li> <li>- tanks which hold less than 550 gal [2081.98 L] may use weekly tank gauging.</li> </ul> <p>Verify that underground piping which routinely contains a regulated substance has the following release detection done according to the methods in Appendix 9-3:</p> <ul style="list-style-type: none"> <li>- pressurized piping: <ul style="list-style-type: none"> <li>- equipped with automatic line leak detector</li> <li>- annual tightness testing or monthly monitoring.</li> </ul> </li> <li>- suction piping: <ul style="list-style-type: none"> <li>- line tightness testing every 3 yr or monthly monitoring</li> <li>- no release detection system is needed for suction piping which is below grade and: <ul style="list-style-type: none"> <li>- operates at less than atmospheric pressure</li> <li>- is sloped so that contents of pipe will roll back to tank when suction is released</li> <li>- only one check valve is included in each suction line</li> <li>- the check valve is located directly below and as close as practical to the suction pump.</li> </ul> </li> </ul> </li> </ul>





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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<b>UST RELEASES</b>  <b>9-21.</b> Facilities with UST systems are required to report releases under specific conditions (40 CFR 280.10(c) and 280.50).	<p>Determine if the facility reported any and all releases which met the following criteria:</p> <ul style="list-style-type: none"> <li>- released regulated substances found at the UST site or in the surrounding area (such as the presence of free product or vapors in soils, basements, sewer and utility lines, and nearby surface waters)</li> <li>- unusual operating conditions observed such as the erratic behavior of dispensing equipment or a sudden loss of product unless it is determined the problem lies in the equipment but it is not leaking and is immediately repaired or replaced</li> <li>- monitoring results indicate a possible release.</li> </ul> <p>Verify that the implementing agency was notified within 24 h (or time period specified by the implementing agency) of the release.</p> <p>(NOTE: The following types of USTs are not subject to these requirements:</p> <ul style="list-style-type: none"> <li>- wastewater treatment tank systems</li> <li>- any UST systems containing radioactive material that are regulated under the <i>Atomic Energy Act</i> of 1954</li> <li>- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A</li> <li>- airport hydrant fuel distribution systems</li> <li>- UST system with field-constructed tanks.)</li> </ul>
<b>9-22.</b> Installations must investigate and confirm all suspected releases of a regulated substances requiring reporting within 7 days unless corrective action is started immediately as detailed in 40 CFR 280.60 through 280.67 (40 CFR 280.10 (c) and 280.52).	<p>Verify that tightness testing is done within 7 days of a suspected release to determine whether a leak is in the tank or the delivery piping.</p> <p>Verify that, if environmental contamination is the basis for suspecting a leak, and the tightness test does not indicate that a leak exists, a site check is done that measures for the presence of a release in the areas where contamination is most likely to be present.</p> <p>(NOTE: If the results indicate that a leak has occurred corrective actions must be started.)</p> <p>(NOTE: If the tightness test does not indicate a leak and environmental contamination is not the basis for suspecting a release, no further investigation is needed.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<b>9-22. (continued)</b>	<p>(NOTE: The following types of USTs are not subject to these requirements:</p> <ul style="list-style-type: none"> <li>- wastewater treatment tank systems</li> <li>- any UST systems containing radioactive material that are regulated under the <i>Atomic Energy Act</i> of 1954</li> <li>- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A</li> <li>- airport hydrant fuel distribution systems</li> <li>- UST system with field-constructed tanks.)</li> </ul>
<p><b>9-23.</b> Facilities with a confirmed release from petroleum or hazardous substance USTs are required to perform specific initial response actions within 24 h of a release (40 CFR 280.60 and 280.61).</p>	<p>Verify that facility personnel are aware of the following initial response actions:</p> <ul style="list-style-type: none"> <li>- the release is reported</li> <li>- immediate action is taken to prevent further release of the regulated substance into the environment</li> <li>- fire, explosion, and vapor hazards are identified and mitigated.</li> </ul> <p>(NOTE: These requirements do not apply to excluded USTs (see the definitions) or USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements.)</p> <p>(NOTE: A RCRA Subtitle C, Section 3004(u) UST is a UST holding a hazardous material at a RCRA Subtitle C permitted facility. A release from such a UST would be handled as required under the RCRA permit's corrective action plan.)</p>

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**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<p><b>9-24.</b> Facilities with a confirmed release from petroleum or hazardous substance USTs are required to perform specific initial abatement measures and site checks unless directed to do otherwise by the implementing agency (40 CFR 280.60 and 280.62).</p>	<p>Verify that the following actions are performed:</p> <ul style="list-style-type: none"> <li>- as much of the substance as is necessary to prevent further release is removed from the UST system</li> <li>- visual inspection of aboveground releases or exposed belowground releases is done and further migration of the released substance into surrounding soils and groundwaters is prevented</li> <li>- monitoring and mitigation of any fire and safety hazards caused by vapors or free product is done</li> <li>- hazards from contaminated soils that are excavated or exposed are remedied</li> <li>- measurements are done for the presence of a release where the contamination is most likely to be present unless the presence and source of the release has previously been confirmed</li> <li>- an investigation is done for the presence of free product and the removal of free product is done as soon as possible.</li> </ul> <p>Verify that within 20 days after release confirmation a report is submitted to the implementing agency summarizing the initial abatement measures, site checks, and the resulting information and data collected.</p> <p>(NOTE: These requirements do not apply to excluded USTs (see the definitions) or USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements.)</p> <p>(NOTE: A RCRA Subtitle C, Section 3004(u) UST is a UST holding a hazardous material at a RCRA Subtitle C permitted facility. A release from such a UST would be handled as required under the RCRA permit's corrective action plan.)</p>
<p><b>9-25.</b> Facilities with a confirmed release from petroleum or hazardous substance USTs are required to assemble information about the site and nature of the release unless exempted by the implementing agency (40 CFR 280.60 and 280.63).</p>	<p>Verify that the following information is collected:</p> <ul style="list-style-type: none"> <li>- data on the nature and estimated quantities of the release</li> <li>- data from available sources and/or site investigations concerning surrounding population, water quality, use and approximate locations of wells potentially affected, subsurface soil conditions, locations of subsurface sewers, climatological conditions, and land use</li> <li>- results of site check</li> <li>- results of free product investigation.</li> </ul> <p>Verify that within 45 days of the release confirmation this information is submitted to the implementing agency in a manner that demonstrates the applicability and technical adequacy or according to a format required by the implementing agency.</p>

<b>COMPLIANCE CATEGORY:</b> <b>UNDERGROUND STORAGE TANK (UST) MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<b>9-25. (continued)</b>	<p>(NOTE: These requirements do not apply to excluded USTs (see the definitions) or USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements.)</p> <p>(NOTE: A RCRA Subtitle C, Section 3004(u) UST is a UST holding a hazardous material at a RCRA Subtitle C permitted facility. A release from such a UST would be handled as required under the RCRA permit's corrective action plan.)</p>
<b>9-26.</b> Facilities with a confirmed release from petroleum or hazardous substance USTs where site investigations have indicated free product must, to the maximum extent possible as required by the implementing agency, remove the free product (40 CFR 280.60 and 280.64).	<p>Determine if there are any release sites at the facility where free product has been confirmed.</p> <p>Verify that free product removal is done so that the spread of contamination is minimized.</p> <p>Verify that, unless exempted by the implementing agency, within 45 days after confirming a release, a free product removal report is submitted to the implementing agency that includes the following:</p> <ul style="list-style-type: none"> <li>- the name of the person responsible for implementing the free product removal measures</li> <li>- the estimated quantity, type, and thickness of free product observed or measured</li> <li>- the type of free product recovery system used</li> <li>- whether there will be any onsite or offsite discharges during the recovery operation and where this discharge will be located</li> <li>- the type of treatment used for any discharge during the recovery operation and where this discharge will be located</li> <li>- the steps taken to obtain any required permits</li> <li>- the disposition of the recovered free product.</li> </ul> <p>(NOTE: These requirements do not apply to excluded USTs (see the definitions) or USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements.)</p> <p>(NOTE: A RCRA Subtitle C, Section 3004(u) UST is a UST holding a hazardous material at a RCRA Subtitle C permitted facility. A release from such a UST would be handled as required under the RCRA permit's corrective action plan.)</p>

**COMPLIANCE CATEGORY:**  
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**Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

9-27. Facilities with a confirmed release from petroleum or hazardous substance USTs are required to perform an investigation for soil and groundwater contamination (40 CFR 280.60 and 280.65).

**REVIEWER CHECKS:**  
**July 1995**

Verify that an investigation of the release, the release site, and possibly affected surrounding areas has been done and identified if any of the following conditions exists:

- evidence that groundwater wells have been affected
- free product is evident
- evidence that contaminated soil is in contact with groundwater
- the implementing agency requests an investigation.

Verify that the results of the investigation are submitted to the implementing agency according to a time schedule defined by the implementing agency.

(NOTE: These requirements do not apply to excluded USTs (see the definitions) or USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements.)

(NOTE: A RCRA Subtitle C, Section 3004(u) UST is a UST holding a hazardous material at a RCRA Subtitle C permitted facility. A release from such a UST would be handled as required under the RCRA permit's corrective action plan.)



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**Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**  
**July 1995**

**DEFERRED USTs**

**9-28.** Deferred UST systems (see definition) are required to meet specific standards (40 CFR 280.10(c) and 280.11).

Verify that deferred UST systems (whether single or double-walled) are not installed to store regulated substances unless:

- releases due to corrosion or structural failure will be prevented for the operational life of the system
- they are cathodically protected against corrosion, constructed of non-corrodible materials, steel clad with a noncorroding material, or designed to prevent release
- they are constructed or lined with material that is compatible with the stored substance.

Verify that deferred systems meet the standards concerning release response and action for USTs containing petroleum or a hazardous substance found in 40 CFR 280.60 through 280.67 (see checklist items 9-22 through 9-27).

(NOTE: The following types of USTs are deferred USTs:

- wastewater treatment tank systems
- any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954
- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A
- airport hydrant fuel distribution systems
- UST system with field-constructed tanks.)





**COMPLIANCE CATEGORY:**  
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REGULATORY REQUIREMENTS:	REVIEWER CHECKS: July 1995
<p><b>UST DOCUMENTATION</b></p> <p><b>9-29.</b> Facilities with USTs are required to meet specific reporting requirements (40 CFR 280.10(c) and 280.34(a)).</p> <p><b>9-30.</b> Facilities with USTs are required to meet specific record-keeping requirements (40 CFR 280.10(c), 280.34(b), 280.34(c), 280.45, and 280.74).</p>	<p>Verify that the facility has submitted the following when applicable:</p> <ul style="list-style-type: none"> <li>- notifications of new USTs</li> <li>- release reports</li> <li>- planned or complete corrective actions</li> <li>- notice of closure or change-in-service.</li> </ul> <p>(NOTE: The following types of USTs are not subject to these requirements:</p> <ul style="list-style-type: none"> <li>- wastewater treatment tank systems</li> <li>- any UST systems containing radioactive material that are regulated under the <i>Atomic Energy Act</i> of 1954</li> <li>- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A</li> <li>- airport hydrant fuel distribution systems</li> <li>- UST system with field-constructed tanks.)</li> </ul> <p>Verify that records are kept of the following:</p> <ul style="list-style-type: none"> <li>- a corrosion expert's analysis of site corrosion potential if corrosion protection equipment is not used</li> <li>- documentation of operation of corrosion protection equipment</li> <li>- documentation of repairs</li> <li>- closure records</li> <li>- results of any site investigations.</li> </ul> <p>Verify that records are available at one of the following:</p> <ul style="list-style-type: none"> <li>- at the UST site and immediately available for inspection</li> <li>- at a readily available alternative site and provided for inspection.</li> </ul> <p>Verify that records are kept as follows:</p> <ul style="list-style-type: none"> <li>- all written performance claims pertaining to any release detection system used for 5 yr from the date of installation</li> <li>- the results of any sampling, testing, or monitoring for 1 yr except the tank tightness results are kept until the next tank tightness test</li> <li>- written documentation of calibration, maintenance, repair of release detection equipment permanently located onsite at least 1 yr after the servicing is done</li> <li>- schedules of required calibration and maintenance provided by the release detection equipment manufacturer for 5 yr after the date of installation.</li> </ul>

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**REGULATORY  
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9-30. (continued)

(NOTE: The following types of USTs are not subject to these requirements:

- wastewater treatment tank systems
- any UST systems containing **radioactive** material that are regulated under the *Atomic Energy Act of 1954*
- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A
- airport hydrant fuel distribution systems
- UST system with field-constructed tanks.)

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**Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

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**CHANGES-IN-  
SERVICE OR  
CLOSURE OF USTs**

**9-31.** USTs which are put out of service temporarily, must have continued maintenance (40 CFR 280.10 (c) and 280.70).

Determine if the facility has any out-of-service USTs.

Verify that proper maintenance is being performed for the following:

- corrosion protection
- release detection.

Verify that, if the UST has been out-of-service for near or over 1 yr, plans have been made for permanent closure.

(NOTE: If the UST is empty, release detection is not required.)

(NOTE: An empty UST is one which has no more than 2.5 cm (1 in.) of residue or less than 0.3 percent by weight of total capacity of the UST system.)

Verify that, if a UST system is closed for 3 mo or more, the vent lines are open and functioning and all other lines, pumps, manways, and ancillary equipment are capped and secured.

Verify that, if the UST has been out-of-service for more than 12 mo and does not meet the standards for new or upgraded USTs, it is permanently closed unless the implementing agency has provided an extension.

(NOTE: The following types of USTs are not subject to these requirements:

- wastewater treatment tank systems
- any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954
- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A
- airport hydrant fuel distribution systems
- UST system with field-constructed tanks.)

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>9-32.</b> Notification must be given to the implementing agency for any closure or change in service 30 days in advance or within a reasonable time frame as determined by the implementing agency (40 CFR 280.10(c) and 280.71(a)).</p> <p><b>9-33.</b> UST closure must be done according to specific requirements (40 CFR 280.10(c) and 280.71(b)).</p>	<p>Determine if the facility is planning to close or change any USTs.</p> <p>Verify that notification of changes were given within 30 days.</p> <p>(NOTE: The following types of USTs are not subject to these requirements:</p> <ul style="list-style-type: none"> <li>- wastewater treatment tank systems</li> <li>- any UST systems containing radioactive material that are regulated under the <i>Atomic Energy Act</i> of 1954</li> <li>- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A</li> <li>- airport hydrant fuel distribution systems</li> <li>- UST system with field-constructed tanks.)</li> </ul> <p>Verify that, if there are any closed USTs or USTs in the process of being closed at the facility, one of the following methods is used:</p> <ul style="list-style-type: none"> <li>- it is removed from ground</li> <li>- it is left in place with the contents removed, and filled with an inert solid material and closing it to all future outside access.</li> </ul> <p>Verify that tanks being permanently closed are emptied and cleaned by removing all liquids and accumulated sludges.</p> <p>Determine if there are any possible abandoned USTs and if there are plans to close the UST off in an appropriate manner.</p> <p>Determine if a site assessment was made to ensure that no releases to the environment have occurred by reviewing records.</p> <p>(NOTE: The following types of USTs are not subject to these requirements:</p> <ul style="list-style-type: none"> <li>- wastewater treatment tank systems</li> <li>- any UST systems containing radioactive material that are regulated under the <i>Atomic Energy Act</i> of 1954</li> <li>- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A</li> <li>- airport hydrant fuel distribution systems</li> <li>- UST system with field-constructed tanks.)</li> </ul>

<b>COMPLIANCE CATEGORY:</b> <b>UNDERGROUND STORAGE TANK (UST) MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> <b>July 1995</b>
<p><b>9-34.</b> Prior to a change-in-service, tanks must be emptied and cleaned and a site assessment conducted (40 CFR 280.10(c) and 280.71(c)).</p>	<p>Determine if there are any tanks which the facility has continued to use to store a non-regulated substance (a change-in-service).</p> <p>Verify that prior to the change, the tank was emptied and cleaned.</p> <p>Verify that prior to the change a site assessment was done.</p> <p>(NOTE: The following types of USTs are not subject to these requirements:</p> <ul style="list-style-type: none"> <li>- wastewater treatment tank systems</li> <li>- any UST systems containing radioactive material that are regulated under the <i>Atomic Energy Act</i> of 1954</li> <li>- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A</li> <li>- airport hydrant fuel distribution systems</li> <li>- UST system with field-constructed tanks.)</li> </ul>
<p><b>9-35.</b> Prior to permanent closure or change-in-service, measurements must be made for the presence of a release where contamination is most likely to be present at the site (40 CFR 280.10(c) and 280.72).</p>	<p>Verify that measurements for the presence of a release have been done.</p> <p>(NOTE: These requirements are met if one of the leak detection methods outlined in 40 CFR 280.43(e) and 280.43(f) have been met (see checklist items 9-17 through 9-19).)</p> <p>(NOTE: The following types of USTs are not subject to these requirements:</p> <ul style="list-style-type: none"> <li>- wastewater treatment tank systems</li> <li>- any UST systems containing radioactive material that are regulated under the <i>Atomic Energy Act</i> of 1954</li> <li>- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A</li> <li>- airport hydrant fuel distribution systems</li> <li>- UST system with field-constructed tanks.)</li> </ul>

**COMPLIANCE CATEGORY:**  
**UNDERGROUND STORAGE TANK (UST) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b> July 1995
<p><b>9-36.</b> Facilities with UST systems closed prior to 22 December 1988 must assess the excavation zone and close the UST according to current standards when directed to do so by the implementing agency (40 CFR 280.10(c) and 280.73).</p>	<p>Determine if the facility has any USTs which were closed prior to 22 December 1988.</p> <p>Verify that the excavation zone of these USTs has been assessed and cleanup done as needed.</p> <p>(NOTE: The following types of USTs are not subject to these requirements:</p> <ul style="list-style-type: none"> <li>- wastewater treatment tank systems</li> <li>- any UST systems containing radioactive material that are regulated under the <i>Atomic Energy Act</i> of 1954</li> <li>- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A</li> <li>- airport hydrant fuel distribution systems</li> <li>- UST system with field-constructed tanks.)</li> </ul>
<p><b>9-37.</b> Excavation zone assessment records shall be maintained for 3 yr (40 CFR 280.10(c) and 280.74).</p>	<p>Verify that excavation zone assessment records are maintained for 3 yr in one of the following ways:</p> <ul style="list-style-type: none"> <li>- by the facility</li> <li>- at the implementing agency if they cannot be maintained at the closed facility.</li> </ul> <p>(NOTE: The following types of USTs are not subject to these requirements:</p> <ul style="list-style-type: none"> <li>- wastewater treatment tank systems</li> <li>- any UST systems containing radioactive material that are regulated under the <i>Atomic Energy Act</i> of 1954</li> <li>- any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A</li> <li>- airport hydrant fuel distribution systems</li> <li>- UST system with field-constructed tanks.)</li> </ul>

# Appendix 9-1

## UST Applicability Guide

Type of UST	Applicable CFR Citation	Checklist #'s
Underground Storage Tanks as defined in 40 CFR 280.12 (see definitions)	40 CFR 280	all
Excluded USTs (see definitions)	none	
Deferred USTs (see definitions)	40 CFR 280.11	9-28
USTs storing fuel for emergency generators	40 CFR 280.20 through 280.22	9-5 through 9-9
	280.30 through 280.34	9-10, 9-12, 9-13 through 9-15, and 9-29
	280.50 through 280.53	9-13 and 9-21 through 9-22
	280.60 through 280.67	9-23 through 9-27
	280.70 through 270.74	9-30 through 9-37





## Appendix 9-2

### Schedule for Phase-In of Release Detection

Year system was installed	Year when release detection is required (by 22 December of the year indicated)				
	1989	1990	1991	1992	1993
Before 1965 or date unknown.	RD	P			
1965-69		P/RD			
1970-74		P	RD		
1975-79		P		RD	
1980-88		P			RD

P = must begin release detection for all pressurized piping as defined in 40 CFR 280.41(b)(1).

RD = must begin release detection for tanks and suction piping.



## Appendix 9-3

### Release Detection Requirements for USTs and Underground Piping (40 CFR 280.41 through 280.43)

#### A. UST Options (see NOTE for additional guidance)

- 1. Inventory control:** Product inventory control must be conducted monthly to detect a release of at least 1.0 percent of flow-through plus 130 gal on a monthly basis in the following manner:
  - i. inventory volume measurements for regulated substance inputs, withdrawals, and the amount still remaining in the tank are recorded each operating day
  - ii. the equipment used is capable of measuring the level of product over the full range of the tanks height to the nearest one-eighth of an inch
  - iii. the regulated substance inputs are reconciled with delivery receipts by measurements of the tank inventory volume before and after delivery
  - iv. deliveries made through a drop tube that extends to within one foot of the tank bottom
  - v. product dispensing is metered and recorded within the local standards of product withdrawn
  - vi. the measurement of any water level in the bottom of the tank is made to the nearest one-eighth of an inch at least once a month.
- 2. Manual gauging:** manual tank gauging must meet the following requirements:
  - i. tank liquid level measurements are taken at the beginning and end of a period of at least 36 h during which no liquid is added to or removed from the tank
  - ii. level measurements are based on an average of two consecutive stick readings at both the beginning and end of the period
  - iii. the equipment used is capable of measuring the level of product over the full range of the tank's height to the nearest one-eighth of an inch
  - iv. a leak is suspected and subject to the requirements of subpart E which include release reporting and investigation if the variation between beginning and ending measurements exceeds the weekly or monthly standards of Table A below
  - v. only tanks of 550 gal or less nominal capacity may use this as a sole method of release detection. Tanks of 551 to 2000 gal may also use inventory control (see paragraph 1 in this appendix). Tanks of greater than 2000 gal nominal capacity may not use this method to meet release detection requirements.

**Table A**

Nominal Tank Capacity	Weekly Standard (one test)	Monthly Standard (average of four)
550 gal or less	10 gal	5 gal
551-1000 gal	13 gal	7 gal
1001-2000 gal	26 gal	13 gal

(continued)

### Appendix 9-3 (continued)

3. **Tank tightness testing:** Tank tightness testing must be capable of detecting a 0.1 gal/h leak rate from any portion of the tank that routinely contains product while accounting for the effects of thermal expansion or contraction of the product, vapor pockets, tank deformation, evaporation or condensation, and the location of the water table.
4. **Tank automatic gauging:** Equipment for automatic tank gauging that tests for the loss of product and conducts inventory control; must meet the following requirements:
  - i. the automatic product level monitor test can detect a 0.2 gal/h leak rate from any portion of the tank that routinely contains product
  - ii. inventory control is conducted according to requirements (see para 1 above).
5. **Vapor monitoring:** Testing or monitoring for vapors within the soil gas of the excavation zone must meet the following requirements:
  - i. the materials used as backfill are sufficiently porous (e.g., gravel, sand, crushed rock) to easily allow diffusion of vapors from releases into the excavation area
  - ii. the stored regulated substance, or a tracer compound placed in the tank system, is sufficiently volatile (e.g., gasoline) to result in a vapor level that is detectable by the monitoring devices located in the excavation zone in the event of a release from the tank
  - iii. the measurement of vapors by the monitoring device is not rendered inoperative by the groundwater, rainfall, or soil moisture or other unknown interferences so that a release could go undetected for more than 30 days
  - iv. the level of background contamination in the excavation zone will not interfere with the method used to detect releases from the tank
  - v. the vapor monitors are designed and operated to detect any significant increase in concentration above background of the regulated substance stored in the tank system, a component or components of that substance, or a tracer compound placed in the tank system
  - vi. in the UST excavation zone, the site is assessed to ensure compliance with the requirements of paragraph 5 subparagraph i through iv above and to establish the number and positioning of monitor wells that will detect any releases within the excavation zone from any portion of the tank that routinely contains product
  - vii. monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.
6. **Groundwater monitoring:** Testing or monitoring for liquids in the groundwater must meet the following requirements:
  - i. the regulated substance stored is immiscible in water and has a specific gravity of less than one
  - ii. groundwater is never more than 20 ft from the ground surface and the hydraulic conductivity of the soil(s) between the UST system and the monitoring wells or devices is not less than 0.01 cm/s (e.g., the soil should consist of gravels, coarse to medium sands, coarse silts, or other permeable materials)
  - iii. the slotted portion of the monitoring well casing must be designed to prevent migration of natural soils or filter pack into the well and to allow entry of regulated substance on the water table into the well under both high and low groundwater conditions
  - iv. monitoring wells should be sealed from the ground surface to the top of the filter pack
  - v. monitoring wells or devices intercept the excavation zone or are as close to it as is technically feasible

(continued)

### Appendix 9-3 (continued)

- vi. the continuous monitoring devices or manual methods used can detect the presence of at least one-eighth of an inch of free product on top of the groundwater in the monitoring wells
  - vii. within and immediately below the UST system excavation zone, the site is assessed to ensure compliance with the requirements of paragraphs 6 i-v above and to establish the number and positioning of monitoring wells or devices that will detect releases from any portion of the tank that routinely contains product
  - viii. monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.
- 7. Interstitial monitoring:** Interstitial monitoring between the UST system and a secondary barrier immediately around or beneath it may be used, but only if the system is designed, constructed and installed to detect a leak from any portion of the tank that routinely contains product and also meets one of the following requirements:
- i. for double-walled systems, the sampling or testing method can detect a release through the inner wall in any portion of the tank that routinely contains product
  - ii. for UST systems with a secondary barrier within the excavation zone, the sampling or testing method used can detect a release between the UST system and the secondary barrier
    - a. the secondary barrier around or beneath the UST system consists of artificially constructed material that is sufficiently thick and impermeable (at least  $10^{-6}$  cm/s for the regulated substance stored) to direct a release to the monitoring point and permit its detection
    - b. the barrier is compatible with the regulated substance stored so that a release from the UST system will not cause a deterioration of the barrier allowing a release to pass through undetected
    - c. for cathodically protected tanks, the secondary barrier must be installed so that it does not interfere with the proper operation of the cathodic protection system
    - d. the groundwater, soil moisture, or rainfall will not render the testing or sampling method used inoperative so that a release could go undetected for more than 30 days
    - e. the site is assessed to ensure that the secondary barrier is always above the groundwater and not in a 25 yr flood plain, unless the barrier and monitoring designs are for use under such conditions
    - f. monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.
  - iii. for tanks with an internally fitted liner, an automated device can detect a release between the inner wall of the tank and the liner. The liner is compatible with the substance stored.
- 8. Other methods:** Any other type of release detection method, or combination of methods, can be used if:
- i) it can detect a 0.2 gal/h leak rate or a release of 150 gal within a month with a probability of detection of 0.95 and a probability of false alarm of 0.05
  - ii) the implementing agency may approve another method, if it can be demonstrated that this method can detect releases as effectively as the methods listed in this appendix

(continued)

## Appendix 9-3 (continued)

NOTE: The following are alternatives on the above listings for UST release detection options:

1. USTs meeting the requirements in 40 CFR 280.20 for new tanks (see checklist items 9-7 through 9-10) and the monthly inventory requirements in A1 and A2 above can use tank tightness testing as outlined in A3 at least every 5 yr until 22 December 1998, or until 10 yr after the tank is installed or upgraded under 40 CFR 280.21(b) (see checklist item 9-6)
2. USTs that do not meet the standards of 40 CFR 280.20 or 280.21 (see checklist items 9-20 through 9-22) may use monthly inventory as outlined in A1 or A2 and annual tank tightness testing done according to A3 until 22 December 1998 when the tank must be upgraded or permanently closed.
3. USTs with a capacity of 550 gal or less may use weekly tank gauging done according to A2.)

### B. Underground Piping Options

1. **Automatic line detectors:** Methods which alert the operator to the presence of a leak by restricting or shutting off the flow of regulated substances through piping, or triggering an audible or visual alarm may be used only if they detect leaks of 3 gal/h at 10 lb/in.<sup>2</sup> line pressure within one hour. An annual test of the operation of the leak detector must be conducted in accordance with the manufacturer's requirements.
2. **Line tightness testing:** A periodic test of piping may be conducted only if it can detect a 0.1 gal/h leak one and one-half times the operating pressure.
3. **Applicable tank methods:** The methods outlined in A5 through A8 may be used if they are designed to detect a release from any portion of the underground piping that routinely contains regulated substances.

(NOTE: The following is additional information on the above listings for underground piping release detection options:

1. Pressurized piping must meet both of the following:
  - a. be equipped with an automatic line leak detector as outlined in B1
  - b. have an annual line tightness test done according to B2 or have monthly monitoring done in accordance with B3
2. Underground suction piping must either have a line tightness test done according to B2 at least every 3 yr or use a monthly monitoring method in accordance with B3. No release detection is required for suction piping that is designed and constructed to meet the following standards:
  - a. the belowgrade piping operates at less than atmospheric pressure
  - b. the belowgrade piping is sloped so that the contents of the pipe will drain back into the storage tank if the suction is released
  - c. only one check valve is included in each suction line
  - d. the check valve is located directly below and as close as practical to the suction pump
  - e. a method is provided that allows compliance with these standards to be readily determined.)

<b>FACILITY:</b>	<b>COMPLIANCE CATEGORY:</b> <b>UNDERGROUND STORAGE TANK (UST)</b> <b>MANAGEMENT</b> Fish and Wildlife Service	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> NA      C      RMA	<b>REVIEWER CHECKS:</b>		

## SECTION 10

### WASTEWATER MANAGEMENT

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**The contents of this section are the minimum requirements the auditor must review. The auditor must also review applicable state and local regulations.**



## SECTION 10

### WASTEWATER MANAGEMENT

#### A. Applicability

This section includes regulations, responsibilities, and compliance requirements associated with wastewater discharge at FWS facilities. Wastewater discharge can include any of the following:

1. sanitary wastewater discharge directly to a receiving stream, or through an FWS treatment facility
2. sanitary or industrial wastewater discharge to a publicly owned treatment works (POTW) or other non-FWS facility
3. stormwater runoff from operational areas of the facility to a receiving stream or water body
4. industrial or storm wastewater drained to an industrial waste reservoir.

Most FWS facilities have wastewater discharge of one kind or another, and therefore, this section will be applicable to most facilities.

#### B. Federal Legislation

- *The Federal Water Pollution Control Act.* This act, commonly known as the *Clean Water Act* (CWA), as amended 4 February 1987, 33 U.S. Code (USC) 1251-1387, Public Law (PL) 100-4, governs the control of water pollution in the nation. The objective of the act is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Federal agencies are required to comply with all Federal, state, interstate, and local water pollution control requirements both substantively and procedurally (33 USC 1323(a)).
- *Executive Order (EO) 12088, Federal Compliance with Pollution Standards.* This EO of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements or to correct situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.
- Federal regulations used to develop the checklist include:
  - EO 12088, *Federal Compliance with Pollution Control Standards.*
  - 40 CFR 122, *EPA Administered Permit Programs: The National Pollutant Discharge Elimination System.*
  - 40 CFR 136, *Guidelines Establishing Test Procedures for the Analysis of Pollutants.*
  - 40 CFR 403, *General Pretreatment Standards for New and Existing Sources.*
  - 40 CFR 503, *Standards for the Use or Disposal of Sewage Sludge.*

### **C. State/Local Regulations**

States normally have wastewater discharge legislation and regulations which require permitting similar to the National Pollution Discharge Elimination System (NPDES) program. The state is often delegated authority to administer the NPDES permits for discharges in their state. These permits are often joint permits issued pursuant to both Federal CWA and state legislation. In some cases, the state will not administer the NPDES program and will issue a state permit even though a NPDES permit has been issued by the U.S. Environmental Protection Agency (USEPA). The states and the USEPA normally cooperate in the permit issuance process to insure that the two permits are consistent, but there may be differences in monitoring requirements and the number of pollutants limited. These requirements normally do not conflict, but may require additional sampling and dual reporting.

States also have more stringent requirements for wastewater treatment plant operations. Many states have sewage treatment plant (STP) operator licensing and certification programs which require that an operator pass an exam and have a required amount of experience.

Local entities (counties, cities) may also have enforceable wastewater discharge limitations which regulate discharges to a POTW. Local limitations often include pH, temperature, and concentrations of various organic and inorganic compounds. Major industrial operations which discharge to an offsite POTW will be subjected to pretreatment permits issued by the POTW, state, or USEPA as appropriate.

### **D. FWS/DOI Manuals**

No applicable manuals final as of the publication of this handbook.

### **E. Key Compliance Requirements**

- NPDES Permits - Facilities with point source discharges and/or treatment works treating domestic sewage are required to have a Federal NPDES permit if located in states without a USEPA approved NPDES permit program. Facilities that are dischargers of stormwater associated with an industrial activity are required to apply for an individual permit, apply for a permit through a group application, or seek coverage under a promulgated stormwater general permit. Facilities must meet the sampling requirements stipulated by NPDES permits (40 CFR 122.1(b)(3) and 122.26(c)).
- Treatment Works - Facilities must not discharge into a treatment works any pollutant that would cause pass through or interference. Facilities shall not introduce pollutants into a treatment works that create a fire or explosion hazard, cause corrosive structural damage, have a pH below 5.0, or are solid or viscous enough to cause obstructions. Facilities are required to notify the treatment works immediately of any discharge, including any slug loadings, that could cause problems to the treatment works (40 CFR 403.5 and 403.12(f)).
- Operation and Maintenance of a Treatment Works - Treatment plant supervisors are required to maintain operating logs and records that are posted daily and are neat and leg-

ible. Treatment plants are required to be operated in accordance with all design parameters (40 CFR 403.12(f)).

- **Land Application of Sludge** - 40 CFR 503 details the pollutant concentrations, cumulative loading rates, and other restrictions pertinent to the land application of sludge that is generated during the treatment of domestic sludge in a treatment works.
- **Surface Disposal of Sewage Sludge** - The operation, management, monitoring, and closure requirements for units used for the surface disposal of sewage sludge are outlined in 40 CFR 503.20 through 503.28.
- **Incineration of Sewage Sludge** - Facilities with incinerators that fire sewage sludge must meet specific emissions standards for beryllium emissions, mercury emissions, and hydrocarbons. The incinerators are required to have continuous monitoring devices for hydrocarbons and oxygen in the exit gas, and continuous monitoring for combustion temperature as specified by the permitting authority. Assorted reports are required to be submitted and records kept (40 CFR 503.40 through 503.48).
- **Recordkeeping** - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

#### F. Key Compliance Definitions

- **Active Sewage Sludge Unit** - a sewage sludge unit that has not closed (40 CFR 503.21(a)).
- **Aerobic Digestion** - the biochemical decomposition of organic matter in sewage sludge into CO<sub>2</sub> and water by microorganisms in the presence of air (40 CFR 503.31(a)).
- **Agricultural Land** - land on which a food crop, a feed crop, or a fiber crop is grown. This includes range land and land used as pasture (40 CFR 503.11(a)).
- **Agonomic Rate** - the whole sludge application rate (dry weight basis) designed (40 CFR 503.11(b)):
  1. to provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop, or vegetation grown on the land
  2. to minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the groundwater.
- **Air Pollution Control Device** - one or more processes used to treat the exit gas from a sewage sludge incinerator stack (40 CFR 503.41(a)).
- **Anaerobic Digestion** - the biochemical decomposition of organic matter in sewage sludge into methane gas and CO<sub>2</sub> by microorganisms in the absence of air (40 CFR 503.31(b)).
- **Annual Pollutant Loading Rate** - the maximum amount of a pollutant that can be applied to a unit area of land during a 365-day period (40 CFR 503.11(c)).

- *Annual Whole Sludge Application Rate* - the maximum amount of sewage sludge (dry weight basis) that can be applied to a unit area of land during a 365 day period (40 CFR 503.11(d)).
- *Apply Sewage Sludge or Sewage Sludge Applied To The Land* - means land application of sewage sludge (40 CFR 503.9(a)).
- *Aquifer* - a geologic formation, group of geologic formations, or a portion of a geologic formation capable of yielding groundwater to wells or springs (40 CFR 503.21(b)).
- *Auxiliary Fuel* - fuel used to augment the fuel value of sewage sludge. This includes, but is not limited to, natural gas, fuel oil, coal, gas generated during anaerobic digestion of sewage sludge, and municipal solid waste (not to exceed 30 percent of the dry weight of sewage sludge and auxiliary fuel together). Hazardous wastes are not auxiliary fuel (40 CFR 503.41(b)).
- *Base Flood* - a flood that has a 1 percent chance of occurring in any given year (i.e., a flood with a magnitude equalled once in 100 yr) (40 CFR 503.9(b)).
- *Bulk Sewage Sludge* - sewage sludge that is not sold or given away in a bag or other container for application to the land (40 CFR 503.11(e)).
- *Class 1 Sludge Management Facility* - any POTW, as defined in 40 CFR 501.2, required to have an approved pretreatment program under 40 CFR 403.8(a) (including any POTW located in a state that has elected to assume local program responsibilities pursuant to 40 CFR 403.10(e)) and any treatment works treating domestic sewage, as defined in 40 CFR 122.2, classified as a Class 1 sludge management facility by the USEPA Regional Administrator, or, in the case of approved state programs, the Regional Administrator in conjunction with the state Director, because of the potential for its sewage sludge use or disposal practice to affect public health and the environment adversely.
- *Class A Sludge* - when one of the following method is used, it is considered Class A with respect to pathogens (40 CFR 503.32(a)(3)):
  - **Alternative 1.** Either the density of fecal coliform in the sewage sludge shall be less than 1000 Most Probable Number/gram (MPN/g) of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

The temperature of the sewage sludge that is used or disposed shall be maintained at a specific value for a period of time. When the percent solids of the sewage sludge is 7 percent or higher, the temperature of the sewage sludge shall be 50 °C [122 °F] or higher; the time period shall be 20 min or longer; and the temperature and

time period shall be determined using the following equation, except when small particles of sewage sludge are heated by either warmed gases or an immiscible liquid.

$$D = \frac{131,700,000}{10^{0.1400t}} \quad \text{Eq. (2)}$$

Where, D = time in days. t = temperature in °C.

When the percent solids of the sewage sludge is 7 percent or higher and small particles of sewage sludge are heated by either warmed gases or an immiscible liquid, the temperature of the sewage sludge shall be 50 °C [122 °F] or higher; the time period shall be 15 s or longer; and the temperature and time period shall be determined using the above equation.

When the percent solids of the sewage sludge is less than 7 percent and the time period is at least 15 s, but less than 30 min, the temperature and time period shall be determined using the above equation.

When the percent solids of the sewage sludge is less than 7 percent; the temperature of the sewage sludge is 50 °C [122 °F] or higher; and the time period is 30 min or longer, the temperature and time period shall be determined using the below equation.

$$D = \frac{50,070,000}{10^{0.1400t}} \quad \text{Eq. (3)}$$

Where, D = time in days. t = temperature in °C.

- **Alternative 2.** Either the density of fecal coliform in the sewage sludge is less than 1000 MPN/g of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

The pH of the sewage sludge that is used or disposed shall be raised to above 12 and shall remain above 12 for 72 h.

The temperature of the sewage sludge shall be above 52 °C [125.6 °F] for 12 h or longer during the period that the pH of the sewage sludge is above 12.

At the end of the 72 h period during which the pH of the sewage sludge is above 12, the sewage sludge shall be air dried to achieve a percent solids in the sewage sludge greater than 50 percent.

- **Alternative 3.** Either the density of fecal coliform in the sewage sludge shall be less than 1000 MPN/g of total solids (dry weight basis), or the density of *Salmonella* sp.

bacteria in sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

The sewage sludge shall be analyzed prior to pathogen treatment to determine whether the sewage sludge contains enteric viruses.

When the density of enteric viruses in the sewage sludge prior to pathogen treatment is less than one Plaque-forming Unit per 4 g of total solids (dry weight basis), the sewage sludge is Class A with respect to enteric viruses until the next monitoring episode for the sewage sludge.

When the density of enteric viruses in the sewage sludge prior to pathogen treatment is equal to or greater than one Plaque-forming Unit per 4 g of total solids (dry weight basis), the sewage sludge is Class A with respect to enteric viruses when the density of enteric viruses in the sewage sludge after pathogen treatment is less than one Plaque-forming Unit per 4 g of total solids (dry weight basis) and when the values or ranges of values for the operating parameters for the pathogen treatment process that produces the sewage sludge that meets the enteric virus density requirement are documented.

After the enteric virus reduction is demonstrated for the pathogen treatment process, the sewage sludge continues to be Class A with respect to enteric viruses when the values for the pathogen treatment process operating parameters are consistent with the values or ranges of values documented.

The sewage sludge shall be analyzed prior to pathogen treatment to determine whether the sewage sludge contains viable helminth ova.

When the density of viable helminth ova in the sewage sludge prior to pathogen treatment is less than 1 per 4 g of total solids (dry weight basis), the sewage sludge is Class A with respect to viable helminth ova until the next monitoring episode for the sewage sludge.

When the density of viable helminth ova in the sewage sludge prior to pathogen treatment is equal to or greater than 1 per 4 g of total solids (dry weight basis), the sewage sludge is Class A with respect to viable helminth ova when the density of viable helminth ova in the sewage sludge after pathogen treatment is less than 1 per 4 g of total solids (dry weight basis) and when the values or ranges of values for the operating parameters for the pathogen treatment process that produces the sewage sludge that meets the viable helminth ova density requirement are documented.

After the viable helminth ova reduction is demonstrated for the pathogen treatment process, the sewage sludge continues to be Class A with respect to viable helminth ova when the values for the pathogen treatment process operating parameters are consistent with the values or ranges of values documented.

- **Alternative 4.** Either the density of fecal coliform in the sewage sludge shall be less than 1000 MPN/g of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

The density of enteric viruses in the sewage sludge shall be less than one Plaque-forming Unit per 4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f), unless otherwise specified by the permitting authority.

The density of viable helminth ova in the sewage sludge shall be less than 1 per 4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f), unless otherwise specified by the permitting authority.

- **Alternative 5.** Either the density of fecal coliform in the sewage sludge shall be less than 1000 MPN/g of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or given away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

Sewage sludge that is used or disposed shall be treated in one of the Processes to Further Reduce Pathogens described in Appendix B of 40 CFR 503.

- **Alternative 6.** Either the density of fecal coliform in the sewage sludge shall be less than 1000 MPN/g of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or given away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

Sewage sludge that is used or disposed shall be treated in a process that is equivalent to a Process to Further Reduce Pathogens, as determined by the permitting authority.

- *Class B Sludge* - when one of the following methods is used, it is considered Class B with respect to pathogens (40 CFR 503.32(b)(2):
  - **Alternative 1.** Seven samples of the sewage sludge is collected at the time the sewage sludge is used or disposed. The geometric mean of the density of fecal coliform in the samples must be less than either 2 million MPN/g of total solids (dry weight basis) or 2 million Colony Forming Units (CFU)/g of total solids (dry weight basis).
  - **Alternative 2.** Sewage sludge that is used or disposed shall be treated in one of the Processes to Significantly Reduce Pathogens described in Appendix B of 40 CFR 503.
  - **Alternative 3.** Sewage sludge that is used or disposed is be treated in a process that is equivalent to a Process to Significantly Reduce Pathogens, as determined by the permitting authority.
- *Contaminate An Aquifer* - to introduce a substance that causes the MCL for nitrate in 40 CFR 141.11 to be exceeded in groundwater or that causes the existing concentration of nitrate in groundwater to increase when the existing concentration of nitrate in the groundwater exceeds the maximum contaminant label for nitrate in 40 CFR 141.11 (40 CFR 503.21(c)).
- *Continuous Discharge* - a discharge which occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or other similar activities (40 CFR 123.3).
- *Control Efficiency* - the mass of a pollutant in the sewage sludge fed to an incinerator minus the mass of that pollutant in the exit gas from the incinerator stack divided by the mass of the pollutant in the sewage sludge fed to the incinerator (40 CFR 503.41(c)).
- *Cover* - soil or other material used to cover sewage sludge placed on an active sewage sludge unit (40 CFR 503.21(d)).
- *Cover Crop* - a small grain crop, such as oats, wheat, or barley, not grown for harvest (40 CFR 503.9(d)).
- *Cumulative Pollutant Loading Rate* - the maximum amount of an inorganic pollutant that can be applied to an area of land (40 CFR 503.11(f)).
- *Daily Discharge* - the discharge of a pollutant measured during a calendar day or any 24-h period that reasonably represents the calendar day for purposes of sampling (40 CFR 122.2).
- *Density Of Microorganisms* - the number of microorganisms per unit mass of total solids (dry weight) in the sewage sludge (40 CFR 503.31(c)).
- *Direct Discharge* - the discharge of a pollutant (40 CFR 122.2).
- *Discharge of Pollutant* - the addition of any pollutant to navigable waters from any point source and any addition of any pollutant to the waters of the contiguous zone or the ocean



zone or the ocean from any point source, other than from a vessel or other floating craft (40 CFR 401.11(h)).

- *Dispersion Factor* - the ratio of the increase in the ground level ambient air concentration for a pollutant at or beyond the property line of the site where the sewage sludge incinerator is located to the mass emission rate for the pollutant from the incinerator stack (40 CFR 503.41(d)).
- *Displacement* - the relative movement of any two sides of a fault measured in any direction (40 CFR 503.21(e)).
- *Domestic Septage* - either liquid or solid material removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device, or similar treatment works that receives only domestic sewage. Domestic septage does not include liquid or solid material removed from a septic tank, cesspool, or similar treatment works that receive either commercial wastewater or industrial wastewater and does not include grease removed from a grease trap at a restaurant (40 CFR 257.2).
- *Domestic Sewage* - waste and wastewater from humans or household operations that is discharged to or otherwise enters a treatment works (40 CFR 503.9(g)).
- *Effluent Limitations* - any restriction established by the Administrator on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources, other than new sources, into navigable waters, the waters of the contiguous zone, or the ocean (40 CFR 401.11(i)).
- *Environmentally Sensitive Area* - an area of environmental importance which is in or adjacent to navigable waters (49 CFR 194.5).
- *Excluded Sludge* - The following are types of sludge and activities which are exempted from meeting the requirements outlined in 40 CFR 503:
  1. processes used to treat domestic sewage or processes used to treat sewage sludge prior to final use except for the standards on pathogen and vector reduction in 40 CFR 503.32 and 503.33
  2. sewage sludge co-fired in an incinerator with other wastes or for the incinerator in which sewage sludge and other waste are co-fired
  3. sludge generated at an industrial facility during the treatment of industrial wastewater, including sewage sludge generated during the treatment of industrial wastewater combined with domestic sewage
  4. sewage sludge determined to be hazardous
  5. sewage sludge with a concentration of PCBs equal to greater than 50 mg/kg of total solids (dry weight basis)
  6. ash generated during the firing of sewage sludge in a sewage sludge incinerator
  7. grit (i.e., sand, gravel, cinders, or other material with high specific gravity) or screenings (e.g., relatively large materials such as rags) generated during preliminary treatment of domestic sewage in a treatment works
  8. sludge generated during the treatment of either surface water or ground water used for drinking water

9. commercial septage, industrial septage, a mixture of domestic septage and commercial septage, or a mixture of domestic septage and industrial septage (40 CFR 503.6).
- *Fault* - a fracture or zone of fractures in any materials along which strata on one side are displaced with respect to strata on the other side (40 CFR 503.21(f)).
  - *Feed Crops* - crops produced primarily for consumption by animals (40 CFR 503.9(j)).
  - *Feedlot* - a concentrated, confined animal or poultry growing operation for meat, milk, or egg production, or stabling in pens or houses wherein the animals or poultry are fed at the place of confinement and crop or forage growth or production is not sustained in the area of confinement (40 CFR 412.11(b)).
  - *Fiber Crops* - crops such as flax and cotton (40 CFR 503.9(k)).
  - *Final Cover* - the last layer of soil or other material placed on a sewage sludge unit at closure (40 CFR 503.21(g)).
  - *Fluidized Bed Incinerator* - an enclosed device in which organic matter and inorganic matter in sewage sludge are combusted in a bed of particles suspended in the combustion chamber gas (40 CFR 503.41(e)).
  - *Forest* - a tract of land thick with trees and underbrush (40 CFR 503.11(g)).
  - *Holocene Time* - the most recent epoch of the Quaternary period, extending from the end of the Pleistocene epoch to the present (40 CFR 503.21(h)).
  - *Hourly Average* - the arithmetic mean of all measurements, taken during 1 h. At least two measurements must be taken during the hour (40 CFR 503.41(f)).
  - *Incineration* - the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device (40 CFR 503.41(g)).
  - *Indirect Discharge* - the introduction of pollutants into a POTW from any nondomestic source regulated under section 307(b), (c), or (d) of the act (40 CFR 403.3(g)).
  - *Industrial Activities* - in relation to stormwater runoff, industrial activities include (40 CFR 122.26(b)(14)(i) through 122.26(b)(14)(xi)):
    1. facilities subject to stormwater effluent limitations guidelines, new source performance standards under 40 CFR subchapter N
    2. facilities classified as Standard Industrial Classification 24 (except 2434), 26 (except 265 and 267), 28 (except 283), 29, 311, 32 (except 323) 35, 344, 373
    3. facilities classified as Standards Industrial Classifications 10 through 14 (mineral industry) including active or inactive mining operations and oil and gas explorations, production, processing, or treatment operations, or transmission facilities that discharge stormwater contaminated by contact with or that has come into contact with, any overburden, raw material, intermediate product, finished products, by-products or waste products located on the site of such operations

4. hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under *Resource Conservation and Recovery Act* (RCRA), Subpart C
  5. landfills, land application sites, and open dumps that receive or have received industrial wastes, including those sites that are subject to Federal regulation
  6. facilities involved in the recycling of materials, including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards, including but not limited to those classified as Standard Industrial Classification 5015 and 5093
  7. steam electric power generating facilities, including coal handling sites
  8. transportation facilities classified as Standard Industrial Classifications 40, 41, 42 (except 4221-25, 43, 44, 45, and 5171) which have vehicle maintenance shops, equipment cleaning operations, or airport de-icing operations
  9. treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludges that are located within the confines of the facility with a design flow of 1.0 mgd or more, or required to have an approved pretreatment program. Not included are farmlands, domestic gardens, or lands used for sludge management where sludge is beneficially reused and which are not physically located in the confines of the facility, or areas that are in compliance with section 405 of the CWA
  10. construction activity including clearing, grading, and excavation activities except operations that result in the disturbance of land less than 5 acres of total land area which are not part of a larger common plan of development or sale
  11. facilities under Standard Industrial Classifications 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 285, 30, 31 (except 311), 323, 34 (except 3441), 35, 36, 37 (except 373), 38, 39, 4221-25, (and which are not otherwise included in categories 1 - 10).
- *Industrial User* - a source of indirect discharge (40 CFR 403.3(h)).
  - *Industrial Wastewater* - wastewater generated in a commercial or industrial process (40 CFR 503.9(n)).
  - *Interference* - a discharge which, alone or in conjunction with one or more discharges from other sources inhibits or disrupts the POTW and causes a violation of any requirement of the POTW's NPDES permit (40 CFR 403.3(i)).
  - *Job Shop* - a facility which owns not more than 50 percent (annual area basis) of the materials undergoing metal finishing (40 CFR 433.11).
  - *Land Application* - the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil (40 CFR 503.11(h)).
  - *Land With a High Potential For Public Exposure* - land that the public uses frequently. This includes, but is not limited to, a public contact site and a reclamation site located in a populated area (e.g., a construction site located in a city) (40 CFR 503.31(d)).

- *Land With a Low Potential For Public Exposure* - land the public uses infrequently. This includes, but is not limited to, agricultural land, forest, and a reclamation site located in an unpopulated area (e.g., a strip mine located in a rural area) (40 CFR 503.31(e)).
- *Leachate Collection System* - a system or device installed immediately above a liner that is designed, constructed, maintained, and operated to collect and remove leachate from a sewage sludge unit (40 CFR 503.21(i)).
- *Liner* - soil or synthetic material that has a hydraulic conductivity of  $1 \times 10^{-7}$  cm/s [ $3 \times 10^{-8}$  in./s] or less (40 CFR 503.21(j)).
- *Lower Explosive Limit For Methane Gas* - the lowest percentage of methane gas in air, by volume, that propagates a flame at 25 °C [77 °F] and atmospheric pressure (40 CFR 503.21(k)).
- *Management Practices (MPs)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- *Monthly Average* - the arithmetic mean of the hourly averages for the hours a sewage sludge incinerator operates during the month (40 CFR 503.41(h)).
- *Monthly Average* - the arithmetic mean of all measurements taken during the month (40 CFR 503.11(i)).
- *Municipality* - a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal Agency of two or more of the foregoing entities: created by or under state law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management Agency under section 208 of the CWA, as amended). The definition includes a special district created under State law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in section 201(e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use, or disposal of sewage sludge. (40 CFR 503.9(o)).
- *National Pretreatment Standard* - any regulation containing pollutant discharge limits promulgated by the USEPA (40 CFR 403.3(j)).
- *Navigable Waters* - all navigable waters of the United States, tributaries of navigable waters of the United States, interstate waters, intrastate lakes, rivers, and streams which are utilized by interstate travelers for rivers, and streams which are utilized by interstate travelers for recreational or other purposes, intrastate lakes, rivers, and streams from which fish or shellfish are taken and sold in interstate commerce and intrastate lakes, rivers, and streams which are utilized for industrial purposes by industries in interstate commerce. Navigable waterways do not include prior converted cropland (40 CFR 401.11(l)).
- *New Source* - in relation to NPDES permits, any building, structure, facility, or installation from which there is or may be a discharge of pollutants the construction of which commenced (40 CFR 122.2 and 122.29(b)):
  1. after promulgation of standards of performance under section 306 of CWA which are applicable to such sources

2. after proposal of standards of performance in accordance with section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with section 306 within 120 days of their proposal.

The following are the criteria for new source determination:

1. it is constructed at a site at which no other source is located
  2. it totally replaces the process or production equipment that causes the discharge of pollutants at an existing sources
  3. its processes are substantially independent of an existing source at the same site.
- *New Source* - any building, structure, facility, or installation from where there is or may be the discharge of pollutants, the construction of which is commenced after the publication of proposed regulations prescribing a standards of performance under section 306 of the CWA, which will be applicable to such source as such standards is thereafter promulgated in accordance with section 306 of the act (40 CFR 401.11(e)).
  - *NPDES Permit* - a permit granted by USEPA to a direct discharger which permits wastewater discharge to a watercourse in accordance with the conditions of the permit. NPDES means National Pollutant Discharge Elimination System (40 CFR 403.3(l)).
  - *Open Lot* - pens or similar confinement areas with dirt, concrete (or paved or hard) surface wherein animals or poultry are substantially or entirely exposed to the outside environment except for possible small portions affording some protection by windbreaks, small shed-type shade areas (40 CFR 412.11(f)).
  - *Other Container* - either an open or closed receptacle. This includes, but is not limited to, a bucket, a box, a carton, and a vehicle or trailer with a load capacity of 1 metric ton (1.1 short tons) or less (40 CFR 503.11(j)).
  - *pH* - the logarithm of the reciprocal of the hydrogen ion concentration (40 CFR 503.31(g)).
  - *Pass Through* - a discharge which exits the POTW into waters in quantities or concentrations which, alone or in conjunction with one or more discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (40 CFR 403.3(n)).
  - *Pasture* - land on which animals feed directly on feed crops such as legumes, grasses, grain stubble, or stover (40 CFR 503.11(k)).
  - *Pathogenic Organisms* - disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova (40 CFR 503.31(f)).
  - *Person* - an individual, association, partnership, corporation, municipality, state or Federal agency, or an agent or employee thereof (40 CFR 503.9(q)).
  - *Person Who Prepares Sewage Sludge* - either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge (40 CFR 503.9(r)).
  - *Place Sewage Sludge or Sewage Sludge Placed* - means disposal of sewage sludge on a surface disposal site (40 CFR 503.9(s)).

- *Point Source* - any discernible confined and discrete conveyance including but not limited to a pipe, ditch, channel, or conduit from which pollutants are or may be discharged (40 CFR 401.11(d)).
- *Pretreatment* - the reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a POTW (40 CFR 403.3(q)).
- *Process Generated Wastewater* - in relation to feedlots, this is water directly or indirectly used in the operation of a feedlot for any or all of the following: spillage or overflow from animal or poultry watering systems; washing, cleaning, or flushing pens, barns, manure pits, or other feedlot facilities; direct contact swimming, washing, or spray cooling of animals; and dust control (40 CFR 412.11(d)).
- *Process Wastewater* - any water which during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, or waste product (40 CFR 401.44(q)).
- *Process Wastewater for Feedlots* - any process generated wastewater and any precipitation (rain or snow) which comes into contact with any manure, litter, or bedding, or any other raw material or intermediate or final material or product used in or resulting from the production of animals or poultry or direct production (40 CFR 412.11(c)).
- *Public Contact Site* - land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses (40 CFR 503.11(l)).
- *Publicly Owned Treatment Works (POTW)* - a treatment works which is owned by the state or a municipality. This includes any devices and systems used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes, and other conveyances only if they convey waste to a POTW (40 CFR 403.3(o)).
- *Qualified Groundwater Scientist* - an individual with a baccalaureate or post-graduate degree in the natural sciences or engineering who has sufficient training and experience in groundwater hydrology and related fields, as may be demonstrated by state registration, professional certification, or completion of accredited university programs, to make sound professional judgments regarding groundwater monitoring, pollutant fate and transport, and corrective action (40 CFR 503.21(l)).
- *Range Land* - open land with indigenous vegetation (40 CFR 503.11(m)).
- *Reclamation Site* - drastically disturbed land that is reclaimed using sewage sludge. This includes, but is not limited to, strip mines and construction sites (40 CFR 503.11(n)).
- *Risk Specific Concentration* - the allowable increase in the average daily ground level ambient air concentration for a pollutant from the incineration of sewage sludge at or beyond the property line of the site where the sewage sludge incinerator is located (40 CFR 503.41(i)).

- *Runoff* - rainwater, leachate, or other liquid that drains overland on any part of a land surface and runs off of the land surface (40 CFR 503.9(v)).
- *Seismic Impact Zone* - an area that has a 10 percent or greater probability that the horizontal ground level acceleration of the rock in the area exceeds 0.10 gravity once in 250 yr (40 CFR 503.21(m)).
- *Sewage Sludge* - solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, domestic septage, scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludges in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewerage in a treatment works (40 CFR 257.2).
- *Sewage Sludge Feed Rate* - either the average daily amount of sewage sludge fired in all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located for the number of days in a 365-day period that each sewage sludge incinerator operates, or the average daily design capacity for all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located (40 CFR 503.41(j)).
- *Sewage Sludge Incinerator* - an enclosed device in which only sewage sludge and auxiliary fuel are fired (40 CFR 503.41(k)).
- *Sewage Sludge Unit* - land on which only sewage sludge is placed for final disposal. This does not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 CFR 122.2 (40 CFR 503.21(n)).
- *Sewage Sludge Unit Boundary* - the outermost perimeter of an active sewage sludge unit (40 CFR 503.21(o)).
- *Specific Oxygen Uptake Rate (SOUR)* - the mass of oxygen consumed per unit time per unit mass of total solids (dry weight basis) in the sewage sludge (40 CFR 503.31(h)).
- *Stack Height* - the difference between the elevation of the top of a sewage sludge incinerator stack and the elevation of the ground at the base of the stack when the difference is equal to or less than 65 m [213.25 ft]. When the difference is greater than 65 m [213.25 ft], stack height is the creditable stack height determined in accordance with 40 CFR 51.100(ii) (40 CFR 503.41(l)).
- *Store or Storage Of Sewage Sludge* - the placement of sewage sludge on land on which the sewage sludge remains for 2 yr or less. This does not include the placement of sewage sludge on land for treatment (40 CFR 503.9(y)).
- *Stormwater Discharge Associated with an Industrial Activity* - the discharge from any conveyance which is used for collecting and conveying stormwater and which is directly related to manufacturing, processing or raw materials storage areas at any industrial plant. This does not include discharges from facilities excluded from the NPDES program. For the categories of industries identified in the definition for industrial activities, the item num-

bers 1 through 10, the term includes, but is not limited to stormwater discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste wastes; sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to stormwater. For item number 11 in the definition for industrial activities the term only includes only stormwater discharges from all the areas (except access roads and rail lines) that are listed in the previous sentence where materials handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to stormwater (40 CFR 122.26(b)(14)).

- *Surface Disposal Site* - an area of land that contains one or more active sewage sludge units (40 CFR 503.21(p)).
- *Total Hydrocarbons* - the organic compounds in the exit gas from a sewage sludge incinerator stack measured using a flame ionization detection instrument referenced to propane (40 CFR 503.41(m)).
- *Total Solids* - the materials in sewage sludge that remain as residue when the sewage sludge is dried at 103 to 105 °C [217.4 to 221 °F] (40 CFR 503.31(i)).
- *Treat or Treatment Of Sewage Sludge* - the preparation of sewage sludge for final use or disposal. This includes, but is not limited to, thickening, stabilization, and dewatering of sewage sludge. This does not include storage of sewage sludge (40 CFR 503.9(z)).
- *Treatment Works* - either a federally owned, publicly owned, or privately owned device or system used to treat (including recycle and reclaim) either domestic sewage or a combination of domestic sewage and industrial waste of a liquid nature (40 CFR 503.9(aa)).
- *Unstabilized Solids* - organic materials in sewage sludge that have not been treated in either an aerobic or anaerobic treatment process (40 CFR 503.31(j)).
- *Unstable Area* - land subject to natural or human-induced forces that may damage the structural components of an active sewage sludge unit. This includes, but is not limited to, land on which the soils are subject to mass movement (40 CFR 503.21(q)).
- *Vector Attraction* - the characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents (40 CFR 503.31(k)).
- *Volatile Solids* - the amount of the total solids in sewage sludge lost when the sewage sludge is combusted at 550 °C [1022 °F] in the presence of excess air (40 CFR 503.31(l)).
- *Wet Electrostatic Precipitator* - an air pollution control device that uses both electrical forces and water to remove pollutants in the exit gas from a sewage sludge incinerator stack (40 CFR 503.41(n)).



- *Wetlands* - those areas that are inundated or saturated by surface water or ground water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (40 CFR 503.9(bb)).
- *Wet Scrubber* - an air pollution control device that uses water to remove pollutants in the exit gas from a sewage sludge incinerator stack (40 CFR 503.41(o)).



## WASTEWATER MANAGEMENT

### GUIDANCE FOR CHECKLIST USERS

	REFER TO CHECKLIST ITEMS:	REFER TO PAGE NUMBER:
All Facilities	10-1 through 10-4	10-23
NPDES Permits	10-5 through 10-10	10-25
Treatment Works Operations	10-11	10-29
Discharges to POTWs/FOTWs General	10-12 through 10-20	10-31
Dredging	10-21	10-35
Effluent Limitations Feedlots	10-22	10-37
Land Application of Sludge General	10-23 through 10-29	10-39
Vectors and Pathogens	10-30 through 10-34	10-45
Notifications	10-35 through 10-39	10-51
Monitoring	10-40 and 10-41	10-57
Recordkeeping and Reporting	10-42 through 10-49	10-59
Surface Disposal of Sludge General	10-50 through 10-56	10-67
Monitoring and Documentation	10-57 through 10-62	10-73
Sludge Incineration	10-63 through 10-70	10-77



## **WASTEWATER MANAGEMENT**

### **Records To Review**

- NPDES Permits
- NPDES Permit renewal applications (if expire within 180 days)
- Discharge monitoring reports for the past year
- Laboratory records and procedures and USEPA QA results
- Monthly operating reports for wastewater treatment facilities
- Flow monitoring calibration certification and supporting records
- Ash pond volume certification and supporting records
- Red water inspection records
- Special reports, certifications, etc., required by NPDES permit
- Spill Prevention Control and Countermeasure (SPCC) plan
- All records required by SPCC plan
- All notices of noncompliance
- All notices of violations
- NPDES state or Federal inspection reports
- Sewage treatment plant operator certification
- Administrative Orders
- Sewer and storm drain layout
- Local sewer ordinance
- Local service use permit
- Notification to local POTW
- Old Spill Reports
- Repair/Maintenance records for the wastewater treatment system
- As-Built Drawings
- Federal Facility Compliance Agreements
- Stormwater pollution prevention plan
- Pretreatment Permits

### **Physical Features To Inspect**

- Discharge outfall pipes
- Wastewater treatment facilities
- Industrial treatment facilities
- Streams, rivers, open waterways
- Floor and sink drains (especially in industrial areas)
- Stormwater collection points (especially in industrial areas)
- Oil storage tanks
- Oil/water separators
- Wastewater generation points



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**ALL FACILITIES**

**10-1.** The current status of any ongoing or unresolved consent orders, compliance agreements, notices of violation (NOVs), inter-agency agreements, or equivalent state enforcement actions is required to be examined (a finding under this checklist item will have the enforcement action/identifying information as the citation).

Determine if noncompliance issues have been resolved by reviewing a copy of the previous report, consent orders, compliance agreements, NOVs, inter-agency agreements, or equivalent state enforcement actions.

**10-2.** FWS facilities are required to comply with state and local wastewater regulations (EO 12088, Section 1-1).

Verify that the facility is complying with state and local water quality requirements.

Verify that the facility is operating according to permits issued by the state or local agencies.

(NOTE: Issues typically regulated by state and local agencies include:

- nonpoint sources
- NPDES permits
- wastewater
- monitoring and recordkeeping for NPDES permitted sources
- certification requirements for laboratories analyzing samples
- wastewater treatment plant operator certification
- sludge disposal
- pretreatment standards
- discharges to sewage treatment facilities
- industrial wastewater
- septic tanks
- stormwater pollution prevention plan
- stormwater discharges.)

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<p><b>10-3.</b> Facilities will meet regulatory requirements issued since the finalization of the handbook (a finding under this checklist item will have the citation of the new regulation as a basis of finding).</p>	<p>Determine if any new regulations concerning wastewater have been issued since the finalization of the handbook.</p> <p>Verify that the facility is in compliance with newly issued regulations.</p>
<p><b>10-4.</b> FWS facilities should report all NOV's to the Region and the Service Pollution Control Office (SPCO) (MP).</p>	<p>Determine if the facility has received an NOV relating to wastewater management.</p> <p>Verify that the NOV was reported to the Region and the SPCO.</p>



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## NPDES PERMITS

10-5. Facilities with point source discharges are required to have a Federal NPDES permit if located in states without an USEPA approved NPDES permit program (40 CFR 122.1(b)(3)).

Determine if the facility is located in a state with an USEPA approved NPDES permit program.

Verify the facility has obtained the proper permits for point source discharges.

Verify that the facility is operating according to permit requirements such as:

- monitoring/sampling
- concentrations of discharge constituents
- recordkeeping
- reports.

Verify that expiring permits are renewed within 180 days of the expiration date.

(NOTE: The Regional Administrator may require the facility to have a permit for the use/disposal of sewage sludge as necessary to protect public health.)

(NOTE: Stormwater runoff may be addressed in the NPDES permit.)

(NOTE: Look for oil/water separators and washracks that discharge directly to the environment.)

**10-6.** Facilities with NPDES permits are required to meet specific reporting requirements (40 CFR 122.41 (l)).

Verify that the facility gives notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility when:

- the alteration or addition might meet one of the criteria for determining if the facility is a new source (see definitions)
- the alteration or addition could significantly change the nature or increase the quantity of pollutants discharged (this applies to pollutants which are not subject to requirements in the permit or other notifications)
- the alteration or addition results in a significant change in the installations sludge use or disposal practices.

Verify that the facility notifies the Director of any planned changes at the permitted facility or activity which may result in noncompliance with permit requirements.

Verify that monitoring is reported as required in the permit.

Determine if the facility is monitoring more frequently than required.

Verify that, if the facility is monitoring more frequently than required by permit, these results are also being reported.

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<b>10-6. (continued)</b>	<p>Verify that reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule on the permit are submitted no later than the specified date.</p> <p>Verify that noncompliance which might endanger health or the environment is reported as follows:</p> <ul style="list-style-type: none"> <li>- orally within 24 h from the time the facility becomes aware of noncompliance</li> <li>- in writing within 5 days of the time the facility becomes aware of noncompliance.</li> </ul>
<b>10-7.</b> Facilities which are dischargers of stormwater associated with an industrial activity (see definitions) are required to apply for an individual permit, apply for a permit through a group application, or seek coverage under a promulgated stormwater general permit (40 CFR 122.26(c)).	<p>Determine if the facility is discharging stormwater associated with an industrial activity or construction activity.</p> <p>Verify that an application has been submitted for a permit.</p> <p>Verify that all requirements of the permit such as a storm water pollution prevention plan are being implemented.</p> <p>Verify that, if the facility has submitted to be part of a FWS/DOI group application, stormwater is not currently covered by the existing facility permit.</p>

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<p><b>10-8.</b> Even where not covered by NPDES permits, stormwater discharge on the facility should be uncontaminated and periodic surveillance of these discharges should be completed (MP).</p>	<p>Determine which drains at the facility are connected to the storm sewer and the location of all outfalls and discharge points.</p> <p>Determine if there is evidence of contamination (oil sheen, discoloration, etc.) by physical review of stormwater discharge sites.</p> <p>Verify that oil/water separators connected to the permitted storm sewer outfall on the facility are operating properly and correctly maintained.</p> <p>Determine if there is evidence of contaminated waste streams discharging to floor drains connected to the stormwater discharge system by checking major industrial shops or industrial areas physically, such as:</p> <ul style="list-style-type: none"> <li>- battery shop</li> <li>- corrosion control</li> <li>- engine shop</li> <li>- motor pool</li> <li>- paint shop</li> <li>- plating shop</li> <li>- pesticide shop</li> <li>- petroleum, oils, and lubricants (POL) area</li> <li>- golf courses</li> <li>- washracks</li> <li>- contractor storage areas.</li> </ul> <p>Determine if there are any plans to eliminate the discharge.</p>
<p><b>10-9.</b> Samples must be collected in accordance with proper collection, testing, preservation, and shipping procedures in Standard Methods for the Examination of Water and Wastewater (40 CFR 136.1 through 136.4).</p>	<p>Verify that:</p> <ul style="list-style-type: none"> <li>- proper sample containers are used</li> <li>- samples are refrigerated to 4 °C during compositing</li> <li>- proper preservation techniques are used</li> <li>- flow-proportioned samples are obtained where required by permit</li> <li>- sample holding times prior to analyses conform with requirements.</li> <li>- the chain of custody is maintained from sampling point through analytic testing to results (essential if litigation occurs).</li> </ul> <p>Verify that results are reported in facility's self-monitoring report.</p>

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**10-10.** Analytical testing must be done in accordance with USEPA approved analytical procedures (40 CFR 136.3).

Determine if:

- a USEPA approved analytical testing lab was used
- proper approval was obtained from state/USEPA if alternate analytical procedures are used
- parameters other than those required by the permit are analyzed
- satisfactory calibration and maintenance of instruments and equipment is done
- quality control procedures are used
- duplicate samples are analyzed
- spiked samples are used
- a commercial laboratory is used
- the commercial laboratory is state certified (states with formal certification program).

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**TREATMENT WORKS**

**Operations**

**10-11.** Personnel engaged or employed in the operation and maintenance of water pollution control facilities should be trained in safety and occupational hazards (MP).

Determine if periodic refresher training is conducted by interviewing operating maintenance staff.

Verify that training is conducted by reviewing training records.



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<p><b>DISCHARGES TO POTWs/FOTWs</b></p> <p><b>General</b></p> <p><b>10-12.</b> Facilities must not discharge into a POTW/FOTW any pollutant which would cause pass through or interference (40 CFR 403.5(a) and 403.5(c) (2)).</p> <p><b>10-13.</b> Facilities shall not introduce specific pollutants into a POTW/FOTW (40 CFR 403.5 (b)).</p>	<p>Determine the following:</p> <ul style="list-style-type: none"> <li>- what point source discharges are at the facility</li> <li>- what drains in the facility lead to the treatment works</li> <li>- what do personnel pour down the drains leading to the treatment works</li> <li>- what types of materials are located in areas where spills may reach the drains to the treatment works.</li> </ul> <p>Determine which drains are connected to the sanitary sewer draining to a POTW/FOTW and possible pollutants entering these drains.</p> <p>Verify that the facility is not discharging to a POTW/FOTW pollutants which would cause a pass through or interference (see definitions).</p> <p>Determine if the POTW/FOTW has imposed any pretreatment standards or reporting requirements on the facility and verify that they are being met.</p> <p>Verify that pollutants which create a fire or explosion hazard in the POTW/FOTW, including but not limited to waste streams with a closed cup flash-point of less than 140 °F (60 °C) are not being discharged from the facility to a POTW/FOTW.</p> <p>Verify that pollutants, which will cause corrosive structural damage to the POTW/FOTW, are not being discharged from the facility to a POTW/FOTW.</p> <p>Verify that in no case are discharges with a pH below 5.0 released.</p> <p>Verify that solid or viscous pollutants in amounts which will cause obstruction to the flow are not being discharged to the POTW/FOTW. Examples are:</p> <ul style="list-style-type: none"> <li>- fish cleaning stations</li> <li>- pieces of metals, rubber, and wood from shops</li> <li>- sand and sediment.</li> </ul> <p>Verify that no pollutants, including pollutants with oxygen demand, are released at a flow rate or concentration that will cause interference with the POTW/FOTW.</p>

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<b>10-13. (continued)</b>	<p>Verify that heat in amounts that would inhibit biological activity at the POTW/FOTW resulting in interference is not discharged, including:</p> <ul style="list-style-type: none"> <li>- scrubber water</li> <li>- boiler blow down.</li> </ul> <p>(NOTE: In no case will the temperature of discharges result in a temperature at the POTW/FOTW of greater than 40 °C (104 °F).)</p> <p>Verify that petroleum, oil, nonbiodegradable cutting oil, or products of mineral oil origin are not discharged in amounts that would result in a pass through or interference (specifically check maintenance areas and oil/water separators).</p> <p>Verify that pollutants which would result in the presence of toxic gases, vapors, or fumes within the POTW/FOTW in quantities that would cause acute worker health and safety problems are not discharged.</p> <p>Verify that no trucked or hauled pollutants are discharged except at discharge points designated by the POTW/FOTW.</p> <p>Determine if the facility has been granted any exemptions or variances concerning its discharges.</p>
<b>10-14.</b> Facilities are required to notify the POTW/FOTW immediately of any discharge, including slug loading, that could cause problems to the POTW/FOTW (40 CFR 403.12(f)).	<p>Verify that personnel at the facility are aware of the need to notify the POTW/FOTW of any discharge that would cause problems.</p>



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<p><b>10-15.</b> FOTWs may only accept wastewaters that meet one of four conditions (FFCA, PL 102-386, Section 3023(a)).</p>	<p>Verify that all wastewater being discharged to the FOTW meets one of the following conditions:</p> <ul style="list-style-type: none"> <li>- a pretreatment standard is established for the source and the source is in compliance with the standard</li> <li>- a schedule for establishing a pretreatment standard for the source has been set by the USEPA and the schedule dictates that the standard will be in place by October 1999. Additionally, the source is in compliance with the standard after the effective date of the standard</li> <li>- the industrial source meets land disposal restriction standards under 40 CFR 268</li> <li>- the industrial activity generates less than 100 kg [220 lb] of hazardous waste per month.</li> </ul>
<p><b>10-16.</b> Industrial users that are not required to meet a categorical pretreatment standard are required to submit specific reports (40 CFR 403.12(h)).</p>	<p>Verify that, if the facility is a significant noncategorical industrial user, it submits a description of the nature, concentration, and flow of pollutants to the Control Authority.</p> <p>Verify that the report is submitted at least once every 6 mo.</p> <p>(NOTE: If the sampling is being done by the POTW itself, no report is necessary.)</p> <p>(NOTE: The Control authority is: the POTW/FOTW, if the POTW's/FOTW's submission for its pretreatment program has been approved or the Approval Authority if the submission has not been approved.)</p>
<p><b>10-17.</b> Industrial users are required to notify the POTW, the Regional Waste Management Division Director, and State hazardous waste authorities in writing of any discharges into the POTW of a substance which would be a hazardous waste (40 CFR 403.12(p)).</p>	<p>Determine if the facility is discharging any substance to a POTW which would be classified as a hazardous waste if disposed of in any other manner.</p> <p>Verify that, if they are discharging a hazardous waste to the POTW, the correct people have been notified of the following:</p> <ul style="list-style-type: none"> <li>- the name of the waste</li> <li>- the type of discharge (batch, continuous, or other)</li> <li>- USEPA hazardous waste number.</li> </ul> <p>Verify that, if the discharge is more than 100 kg/mo, the following information is also included to the extent that it is known and readily available:</p> <ul style="list-style-type: none"> <li>- identification of the hazardous constituents</li> <li>- an estimate of the mass and concentrations of the constituents in the waste discharges during the calendar month.</li> </ul>

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<p><b>10-18.</b> FOTWs cannot accept the discharge of any acutely hazardous wastes (FFCA, PL 102-386, Section 3023(b)).</p>	<p>Verify that, if any hazardous waste is discharged to the FOTW, it is not acutely hazardous waste.</p>
<p><b>10-19.</b> All industrial users are required to notify the POTW/FOTW in advance of any substantial change in the volume or character of pollutants in their discharge (40 CFR 403.12(j)).</p>	<p>Verify that the sources of industrial discharge on the facility notify the POTW/FOTW in advance of any substantial changes in the volume or character of pollutants in their discharge, including any listed or characteristic hazardous wastes.</p>
<p><b>10-20.</b> Industrial users and POTWs/FOTWs are required to keep specific reports (40 CFR 403.12(o)).</p>	<p>Verify that the facility and the POTW/FOTW keeps records of all information resulting from monitoring activities.</p> <p>Verify that the records include for all samples the following information:</p> <ul style="list-style-type: none"> <li>- the date, exact place, methods, and time of sampling and the names of the person or persons taking the samples</li> <li>- the dates analyses were performed</li> <li>- who performed analyses</li> <li>- the analytical techniques, methods used</li> <li>- the results of the analyses.</li> </ul> <p>Verify that records are kept for 3 yr and are signed and certified by the facility equivalent of a responsible corporate officer.</p>

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**DREDGING**

**10-21.** Department of the Army permits are required for the discharge of dredged or fill material into waters of the United States (33 CFR 323.3(a)(b)).

Determine if the facility has wetlands.

Verify that any activities involving dredging and filling wetlands are permitted by the Army Corps of Engineers.

(NOTE: Fill material means any material used for the primary purpose of replacing an aquatic area with dry land or of changing the bottom elevation of a water body. The term does not include any pollutant discharged into the water primarily to dispose of waste, as that activity is regulated under Section 402 of CWA.)



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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS July 1995</b>
<p><b>EFFLUENT LIMITATIONS</b></p> <p><b>Feedlots</b></p> <p><b>10-22.</b> Feedlots, except those for ducks, are required to meet specific effluent limitation standards (40 CFR 412.12 through 412.16).</p>	<p>Determine if the facility operates a feedlot.</p> <p>Verify that there is no discharge of process wastewater pollutants to navigable waters.</p> <p>(NOTE: For existing sources, when best practicable control technology (BPT) currently available is used, process waste pollutants may be discharged to navigable waters whenever rainfall events, either chronic or catastrophic, cause an overflow of process wastewater from a facility designed, constructed, and operated to contain all process generated wastewaters plus the runoff from a 10-yr, 24-h rainfall event for the location of the point source. If the best available technology economically achievable is used it is a 25-yr, 24-h rainfall event.)</p> <p>(NOTE: For new sources, process waste pollutants may be discharged to navigable waters whenever rainfall events, either chronic or catastrophic, cause an overflow of process wastewater from a facility designed, constructed, and operated to contain all process generated wastewaters plus the runoff from a 25-yr, 24-h rainfall event for the location of the point source.)</p> <p>Verify that, for existing sources, the following pretreatment standard is met for discharge to a POTW:</p> <ul style="list-style-type: none"> <li>- fecal coliform: no irritation</li> <li>- BOD<sub>5</sub>: no irritation.</li> </ul>



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**LAND APPLICATION  
OF SLUDGE**

**General**

**10-23.** Representative samples of sewage sludge applied to the land, placed on a surface disposal site, or fired in a sewage sludge incinerator, are required to be collected and analyzed (40 CFR 503.8).

(NOTE: Checklist items 10-23 through 10-70 apply only to sludge generated during the treatment of domestic sewage in a treatment works. For exclusions see the definitions of the term Excluded Sludge. A summary of the important compliance dates is found in Appendix 10-1.)

Verify that the following types of facilities meet the standards outlined in 40 CFR 503:

- the treatment works treats only domestic sewage
- the treatment works is designed for domestic sewage treatment but also treats some industrial wastewaters
- the treatment works is designed for industrial wastewater treatment and it only treats domestic sewage at any one time during operations and then the resulting sewage sludge has to meet 40 CFR 503
- the treatment works generates domestic septage only
- the installation further changes the quality or treats (e.g., composting of sewage sludge) the sewage sludge of domestic septage received from a generator of sewage sludge /domestic septage for land application and is therefore a preparer of sewage sludge.

(NOTE: If the facility treatment works meets any of the following, the requirements in 40 CFR 503 do not apply:

- it treats industrial wastewaters only
- it is an industrial wastewater treatment plant that also treats domestic sewage along with the industrial wastewater
- it generates a combination of:
  - domestic septage and commercial septage (i.e., grease from grease traps)
  - domestic septage and industrial septage
  - commercial septage and industrial septage.)

Determine if the facility applies sewage sludge to the land, places it on a surface disposal site, or fires it in a sewage sludge incinerator.

Verify that the sludge is analyzed prior to application, placement, or firing for the following:

- enteric viruses
- fecal coliforms
- helminth ova
- inorganic pollutants
- salmonella bacteria
- SOUR
- total, fixed, and volatile solids.

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<p><b>10-24.</b> Depending on when the last time bulk sewage sludge subject to the cumulative loading rates in Appendix 10-2 was last applied to a site specific standards have to be met (40 CFR 503.12(e)(2)).</p>	<p>Verify that personnel contacted the permitting authority in the State to determine if bulk sewage sludge which has to meet the standards in Appendix 10-2 has been applied to the site since 20 July 1993.</p> <p>(NOTE: If sludge subject to these standards has not been applied to the site since 20 July 1993, the cumulative amount for each pollutant in Appendix 10-2 may be applied.)</p> <p>Verify that, if bulk sewage sludge subject to these standards has been applied since 20 July 1993 and the cumulative amount of each pollutant applied to the site is known, the known cumulative amount is used to determine the additional amount of each pollutant that can be applied.</p> <p>(NOTE: If the cumulative amount is not known, there shall be no further application to the site.)</p>
<p><b>10-25.</b> Bulk sewage sludge or sewage sludge sold or given away in a bag or other container must meet specific standards (40 CFR 503.10(e), 503.10(f), 503.13(a)(1), 503.13(a)(4), and 503.14 (e)).</p>	<p>Verify that, if the facility gives or sells bulk sewage sludge or sewage sludge in a bag or other container, it meets the pollutant concentration limits in Appendix 10-3.</p> <p>Verify that, if the facility gives or sells bulk sewage sludge in a bag or other container, it meets one of the following:</p> <ul style="list-style-type: none"> <li>- pollutant concentrations do not exceed the values identified in Appendix 10-4</li> <li>- the product of the concentration of each pollutant in the sewage sludge and the annual whole sludge application rate for the sewage sludge does not cause the annual pollutant loading rates in Appendix 10-5 to be exceeded.</li> </ul> <p>Verify that a label is affixed to the bag or container or an information sheet provided to the person who receives the sewage sludge.</p> <p>Verify that the label or information sheet states:</p> <ul style="list-style-type: none"> <li>- the name and address of the person who prepared the sewage sludge</li> <li>- a statement that the application to land is prohibited except in accordance with the instructions on the label or information sheet</li> <li>- the annual whole sludge application rate for the sewage sludge that does not cause any exceedance of the annual pollutant loading rates in Appendix 10-5.</li> </ul>



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10-25. (continued)	<p>(NOTE: When sewage sludge or material derived from sewage sludge is sold or given away in a bag or other container and meets the requirements in Appendix 10-4, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from the labeling requirements:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period are reduced by less than 17 percent, vector attraction reduction is achieved</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period are reduced by less than 15 percent, vector attraction reduction is achieved</li> </ul> </li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.)</li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS July 1995</b>
<p><b>10-26.</b> The application of bulk sewage sludge is not permitted in specific circumstances (40 CFR 503.14(a) through 503.14(c)).</p>	<p>Verify that bulk sewage sludge is not applied to the land if it is likely to adversely threaten an endangered species or its designated critical habitat.</p> <p>Verify that bulk sewage sludge is not applied to agricultural land, forest, a public contact site, or reclamation site that is flooded, frozen, or snow covered so that the bulk sewage sludge enters a wetland or other waters of the United States.</p> <p>Verify that bulk sewage sludge is not applied to agricultural land, forest, or a reclamation site that is 10 m [32.81 ft] or less from waters of the United States unless allowed by the permitting authority.</p> <p>(NOTE: When bulk sewage sludge or bulk material derived from sewage sludge is applied to the land that meets the requirements in Appendix 10-4, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from these requirements:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period are reduced by less than 17 percent, vector attraction reduction is achieved</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period are reduced by less than 15 percent, vector attraction reduction is achieved</li> </ul> </li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h</li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b> <b>July 1995</b>
<b>10-26. (continued)</b>	<ul style="list-style-type: none"> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.)</li> </ul>
<b>10-27.</b> Bulk sewage sludge applied to agricultural land, forest, a public contact site, or a reclamation site must meet specific standards (40 CFR 503.12(b), 503.13(a)(2) and 503.14(d)).	<p>Verify that the cumulative loading rate for each pollutant does not exceed the limits outlined in Appendix 10-2.</p> <p>Verify that the concentration of each pollutant in the sewerage sludge does not exceed the concentration for the pollutant in Appendix 10-4.</p> <p>Verify that bulk sewage sludge is applied at a whole sludge application rate that is equal to or less than the agronomic rate for the bulk sewage sludge unless otherwise specified by a permitting authority.</p> <p>(NOTE: When bulk sewage sludge is applied to the land that meets the requirements in Appendix 10-4, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from the requirements concerning Appendix 10-2 and the agronomic rate application:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done:               <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period are reduced by less than 17 percent, vector attraction reduction is achieved</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period are reduced by less than 15 percent, vector attraction reduction is achieved</li> </ul> </li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> </ul>

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**10-27. (continued)**

- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40°C [114 °F] and the average temperature is higher than 45 °C [113 °F]
- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h
- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials
- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.)

**10-29.** The annual application rate for domestic septage applied to agricultural land, forest or a reclamation site must not exceed specific limits (40 CFR 503.12(c) and 503.13(c)).

Verify that the annual application rate for domestic septage applied to agricultural lands, forest or a reclamation site does not exceed the annual application rate calculated using the following equation:

AAR = Annual application rate in gallons per acre per 365-day period  
N = amount of nitrogen in pounds per acre per 365-day period needed by the crop or vegetation grown on the land.

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**LAND APPLICATION  
OF SLUDGE**

**Vectors and  
Pathogens**

**10-30.** Bulk sewage sludge applied to agricultural land, forest, a public contact site or a reclamation site is required to meet specific standards for pathogens (40 CFR 503.15(a)(1), 503.32(a), and 503.32(b)).

Verify that the sewage sludge meets the Class A or the Class B pathogen requirements (see definitions) and the following site restrictions:

- food crops with harvested parts that touch the sewage sludge soil mixture and are totally above the land surface are not harvested for 14 mo after application of sewage sludge
- food crops with harvested parts below the surface of the land are not harvested for 20 mo after the application of sewage sludge when the sewage sludge remains on the land surface for 4 mo or longer prior to incorporation into the soil
- food crops with harvested parts below the surface of the land are not harvested for 38 mo after application of sewage sludge when the sewage sludge remains on the land surface for less than 4 mo prior to incorporation into the soil
- food crops, feed crops, and fiber crops are not harvested for 30 days after application of the sewage sludge
- animals are not allowed to graze for 30 days after application
- turf grown on land where sewage sludge is applied is not harvested for 1 yr after application of sewage sludge when the turf is placed on either land with a high potential for public exposure or a lawn, unless otherwise specified by the permitting authority
- public access to land with a high potential for public exposure is restricted for 1 yr after application
- public access to land with a low potential for public exposure is restricted for 30 days after application.

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b> July 1995
<p><b>10-31.</b> Bulk sewage sludge applied to agricultural land, forest, a public contact site or a reclamation site is required to meet specific standards for vector attraction reduction (40 CFR 503.15(c)(1) and 503.33(b)(1) through 503.33(b)(10)).</p>	<p>Verify that one of the following vector reduction requirements are met:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period are reduced by less than 17 percent, vector attraction reduction is achieved.</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period are reduced by less than 15 percent, vector attraction reduction is achieved.</li> </ul> </li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials</li> <li>- sewage sludge is injected below the surface of the land: <ul style="list-style-type: none"> <li>- no significant amount of the sewage sludge is present on the land surface within 1 h after injection</li> <li>- when the sludge that is injected is Class A with respect to pathogens, the sludge is injected below the land surface within 8 h after being discharged from the pathogen treatment process</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b> <b>July 1995</b>
<b>10-31. (continued)</b>	<ul style="list-style-type: none"> <li>- sewage sludge applied to a land surface or placed on a surface disposal site is incorporated into the soil within 6 h after application to or placement on the land. When sludge incorporated into the soil is Class A, the sewage sludge is applied to or placed on the land within 8 h after being discharged from the pathogen treatment process.</li> </ul>
<b>10-32.</b> Bulk sewage sludge applied to a lawn or home garden must meet the Class A pathogen requirements and specific vector reduction requirements (40 CFR 503.15 (a)(2), 503.32(a), and 503.33(b)(1) through 503.33(b)(8)).	<p>Verify that, for bulk sewage sludge, the Class A pathogen requirements (see definitions) are met.</p> <p>Verify that one of the following vector reduction requirements are met:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. if this cannot be done:               <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period are reduced by less than 17 percent, vector attraction reduction is achieved.</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period are reduced by less than 15 percent, vector attraction reduction is achieved.</li> </ul> </li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS July 1995</b>
<b>10-32. (continued)</b>	<ul style="list-style-type: none"> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.</li> </ul>
<p><b>10-33. Sewage sludge</b> that is sold or given away in a bag or container must meet Class A pathogen requirements and specific vector reduction requirements (40 CFR 503.15(a)(3), 503.32(a), and 503.33(b)(1) through 503.33(b)(8)).</p>	<p>Verify that, for sewage sludge that is sold or given away in a bag or container, it meets the Class A pathogen requirements (see Definitions).</p> <p>Verify that one of the following vector reduction requirements are met:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent</li> <li>- a 17 percent reduction of volatile solids when the 38 percent volatile solids reduction requirements cannot be met for an anaerobically digested sewage sludge and the vector reduction attraction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]</li> <li>- a 15 percent reduction of volatile solids when the 38 percent volatile solids reduction requirements cannot be met for an aerobically digested sewage sludge and the vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has percent solids of two percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20 °C [68 °F]</li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer and the temperature is higher than 40 °C [104 °F] and the average temperature of the sewage sludge is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition and, without the addition of more alkali, remains at 12 or higher for 2 h and than at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 percent based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.</li> </ul>



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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS July 1995</b>
<p><b>10-34.</b> Domestic septage that is applied to agricultural land, forest, or a reclamation site must meet specific pathogen requirements and vector reduction requirements (40 CFR 503.15(b), 503.15(d), 503.32(c)(1), 503.32(c)(2), 503.33(b)(9), 503.33(b)(10), and 503.33(b)(12)).</p>	<p>Verify that one of the following requirements is met for pathogen control:</p> <ul style="list-style-type: none"> <li>- the pH of the domestic septage is raised to 12 or higher by alkali addition, remaining 12 or higher for 30 min, and the following land restrictions are met: <ul style="list-style-type: none"> <li>- food crops with harvested parts that touch the sewage sludge soil mixture and are totally above the land surface are not harvested for 14 mo after application of sewage sludge</li> <li>- food crops with harvested parts below the surface of the land are not harvested for 20 mo after the application of sewage sludge when the sewage sludge remains on the land surface for 4 mo or longer prior to incorporation into the soil</li> <li>- food crops with harvested parts below the surface of the land are not harvested for 38 mo after application of sewage sludge when the sewage sludge remains on the land surface for less than 4 mo prior to incorporation into the soil</li> <li>- food crops, feed crops, and fiber crops are not harvested for 30 days after application of the sewage sludge</li> </ul> </li> <li>- site restrictions are followed: <ul style="list-style-type: none"> <li>- food crops with harvested parts that touch the sewage sludge soil mixture and are totally above the land surface are not harvested for 14 mo after application of sewage sludge</li> <li>- food crops with harvested parts below the surface of the land are not harvested for 20 mo after the application of sewage sludge when the sewage sludge remains on the land surface for 4 mo or longer prior to incorporation into the soil</li> <li>- food crops with harvested parts below the surface of the land are not harvested for 38 mo after application of sewage sludge when the sewage sludge remains on the land surface for less than 4 mo prior to incorporation into the soil</li> <li>- food crops, feed crops, and fiber crops are not harvested for 30 days after application of the sewage sludge</li> <li>- animals are not allowed to graze for 30 days after application</li> <li>- turf grown on land where sewage sludge is applied is not harvested for 1 yr after application of sewage sludge when the turf is placed on either land with a high potential for public exposure or a lawn, unless otherwise specified by the permitting authority</li> <li>- public access to land with a high potential for public exposure is restricted for 1 yr after application</li> <li>- public access to land with a low potential for public exposure is restricted for 30 days after application.</li> </ul> </li> </ul>

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**10-34. (continued)**

Verify that one of the following vector attraction reduction requirements is met:

- sewage sludge is injected below the surface of the land:
  - no significant amount of the sewage sludge is present on the land surface within 1 h after injection
  - when the sludge that is injected is Class A with respect to pathogens, the sludge is injected below the land surface within 8 h after being discharged from the pathogen treatment process
- sewage sludge applied to a land surface or placed on a surface disposal site is incorporated into the soil within 6 h after application to or placement on the land. When sludge incorporated into the soil is Class A, the sewage sludge is applied to or placed on the land within 8 h after being discharged from the pathogen treatment process
- the pH of domestic septage is raised to 12 or higher by alkali addition and, without the addition of more alkali, remains at 12 or higher for 30 min.

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<p><b>LAND APPLICATION OF SLUDGE</b></p> <p><b>Notifications</b></p> <p><b>10-35.</b> Persons who prepare bulk sewage sludge are required to provide specific notifications (40 CFR 503.10(b), 503.12(f), and 503.12(g)).</p>	<p>Verify that, if the facility prepare bulk sewage sludge, it provides the person applying the bulk sewage sludge the notices and necessary information needed to comply with the land application regulations.</p> <p>(NOTE: When bulk sewage sludge or bulk material derived from sewage sludge is applied to the land that meets the requirements in Appendix 10-4, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from these requirements:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period are reduced by less than 17 percent, vector attraction reduction is achieved</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period are reduced by less than 15 percent, vector attraction reduction is achieved</li> </ul> </li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS July 1995</b>
<p><b>10-35. (continued)</b></p> <p><b>10-36.</b> Persons who prepare bulk sewage sludge that is applied to agricultural land, forest, a public contact site, or a reclamation site are required to provide users written notification of the total nitrogen on a dry weight basis (40 CFR 503.12(d)).</p> <p><b>10-37.</b> Persons who apply bulk sewage sludge to the land are required to provide notice to the land owner or lease holder (40 CFR 503.10(b), 503.10(c), and 503.12(h)).</p>	<p>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.)</p> <p>Determine if the facility prepares sewage sludge for application to agricultural land, forest, a public contact site, or a reclamation site.</p> <p>Verify that the facility provides users with written notification of the total nitrogen on a dry weight basis.</p> <p>Verify that notice is given that includes the information needed to verify compliance with the land application regulations.</p> <p>(NOTE: When bulk sewage sludge or bulk material derived from sewage sludge is applied to the land that meets the requirements in Appendix 10-4, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from these requirements:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C. [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period are reduced by less than 17 percent, vector attraction reduction is achieved</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period are reduced by less than 15 percent, vector attraction reduction is achieved</li> </ul> </li> </ul>

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<p><b>10-37. (continued)</b></p>	<ul style="list-style-type: none"> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.)</li> </ul>
<p><b>10-38.</b> Facilities that prepare bulk sewage sludge that is used in a different state are required to provide written notice (40 CFR 503.12(i)).</p>	<p>Determine if the facility prepares sewage sludge for land application that is used in another state.</p> <p>Verify that written notification is prepared and provided to the permitting authority in the state of application that includes the following:</p> <ul style="list-style-type: none"> <li>- the location of each land application site</li> <li>- the approximate time period bulk sewage sludge will be applied to the site</li> <li>- the name, address, telephone number, and NPDES permit number (if appropriate) for the facility preparing the sludge</li> <li>- the name, address, telephone number, and NPDES permit number (if appropriate) for the facility applying the sludge.</li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS July 1995</b>
<p><b>10-39.</b> Facilities that apply bulk sewage sludge subject to the cumulative loading rates in Appendix 10-2 are required to provide written notice prior to the initial application of the sludge (40 CFR 503.10(b), 503.10(c), and 503.12(j)).</p>	<p>Verify that, prior to the initial application of bulk sewage sludge that is subject to the cumulative loading rates in Appendix 10-2, notice is provided to the permitting authority for the state that includes:</p> <ul style="list-style-type: none"> <li>- the location of the land application site</li> <li>- the name, address, telephone number, NPDES permit number (if appropriate) of the facility applying the sludge.</li> </ul> <p>(NOTE: When bulk sewage sludge or bulk material derived from sewage sludge is applied to the land that meets the requirements in Appendix 10-4, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from these requirements:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. if this cannot be done: <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period are reduced by less than 17 percent, vector attraction reduction is achieved</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period are reduced by less than 15 percent, vector attraction reduction is achieved</li> </ul> </li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> </ul>

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10-39. (continued)

- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.)





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**LAND APPLICATION  
OF SLUDGE**

**Monitoring**

**10-40.** Monitoring for the limitations in Appendices 10-2 through 10-5, pathogen density in Class A and Class B pathogens, and vector attraction reduction requirements must be done according to the frequency in Appendix 10-6 (40 CFR 503.16 (a)).

**10-41.** In specific instances, when domestic sewage is applied to agricultural land, forest, or a reclamation site, each container of domestic septage applied to the land is required to be monitored for compliance (40 CFR 503.16 (b)).

Verify that monitoring for the limitations in Appendices 10-2 through 10-5, pathogen density in Class A and Class B pathogens, and vector attraction reduction requirements is done according to the frequency in Appendix 10-6.

(NOTE: After the sewage sludge has been monitored for 2 yr, the permitting authority may reduce the frequency of monitoring.)

Verify that each container of domestic septage is monitored if the pH has been raised to 12 or higher by alkali addition, and kept there for 30 min.



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<p><b>LAND APPLICATION OF SLUDGE</b></p> <p><b>Recordkeeping and Reporting</b></p> <p><b>10-42.</b> When bulk sewage sludge is applied to the land or sold in a bag or container and it meets the requirements in Appendix 10-4, Class A pathogen requirements, and vector attraction reduction requirements, specific recordkeeping requirements must be met (40 CFR 503.17(a)(1)).</p>	<p>Determine if the facility applies bulk sewage sludge or sells or gives it away in a bag or container.</p> <p>Verify that it meets the requirements in Appendix 10-4, Class A pathogen requirements (see definitions) and one of the following vector attraction reduction requirements:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period are reduced by less than 17 percent, vector attraction reduction is achieved.</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [86 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period are reduced by less than 15 percent, vector attraction reduction is achieved.</li> </ul> </li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [86 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> </ul>

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**10-42. (continued)**

- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.

Verify that the following information is retained for 5 yr:

- the concentration of each pollutant listed in Appendix 10-4
- a statement certifying which form of vector attraction reduction is being used and that Class A pathogen requirements are being met
- a description of how the Class A pathogen requirements are being met
- a description of how the vector attraction reduction is being met.

**10-43.** When the facility derives material from sewage sludge for application and/or to sell or give away in a bag or container and it meets the requirements in Appendix 10-4, Class A pathogen requirements, and vector attraction reduction requirements, specific record keeping requirements must be met (40 CFR 503.17(a)(2)).

Determine if the facility derives material from bulk sewage sludge or sells or gives away material derived from sewage sludge in a bag or container.

Verify that it meets the requirements in Appendix 10-4, Class A pathogen requirements (see definitions), and one of the following vector attraction reduction requirements:

- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done:
  - for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period are reduced by less than 17 percent, vector attraction reduction is achieved.
  - for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [86 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period are reduced by less than 15 percent, vector attraction reduction is achieved.
- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [86 °F]
- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]

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**10-43. (continued)**

- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h
- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials
- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.

Verify that the following information is retained for 5 yr:

- the concentration of each pollutant listed in Appendix 10-4
- a statement certifying which vector attraction reduction is being used and that Class A pathogen requirements are being met
- a description of how the Class A pathogen requirements are being met
- a description of how the vector attraction reduction is being met.

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<p><b>10-44.</b> When the bulk sewage sludge that meets the limitations in Appendix 10-4, the requirements concerning Class A pathogens and the vector attraction reduction requirements is applied to agricultural land, forest, a public contact site, or a reclamation site specific reporting requirements must be met (40 CFR 503.17(a)(3)).</p>	<p>Determine if the facility applies bulk sewage sludge to agricultural land, forest, a public contact site or reclamation site.</p> <p>Verify that it meets the requirements in Appendix 10-4, Class A pathogen requirements (see definitions) and one of the following vector attraction reduction requirements:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F] When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period are reduced by less than 17 percent, vector attraction reduction is achieved.</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period are reduced by less than 15 percent, vector attraction reduction is achieved.</li> </ul> </li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.</li> </ul>

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<b>10-44. (continued)</b>	<p>Verify that the following information is retained for 5 yr by the person who prepares the sludge:</p> <ul style="list-style-type: none"> <li>- the concentration of each pollutant listed in Appendix 10-4</li> <li>- a statement certifying which vector attraction reduction is being used and that Class A pathogen requirements are being met</li> <li>- a description of how the Class A pathogen requirements are being met</li> <li>- a description of how the vector attraction reduction is being met.</li> </ul> <p>Verify that the following information is retained for 5 yr by the person who applies the sludge:</p> <ul style="list-style-type: none"> <li>- a statement certifying that appropriate management practices and application procedures are being used</li> <li>- a description of how required management practices are implemented</li> <li>- a description of how the vector reduction requirements are met.</li> </ul>
<b>10-45.</b> When the bulk sewage sludge meets the limitations in Appendix 10-4 and the requirements concerning Class B pathogens, and is applied to agricultural land, forest, a public contact site, or reclamation site specific reporting requirements must be met (40 CFR 503.17(a)(4)).	<p>Determine if the facility applies bulk sewage sludge to agricultural land, forest, a public contact site or reclamation site.</p> <p>Verify that it meets the requirements in Appendix 10-4 and Class B pathogen requirements (see definitions).</p> <p>Verify that the following information is retained for 5 yr by the person who prepares the sludge:</p> <ul style="list-style-type: none"> <li>- the concentration of each pollutant listed in Appendix 10-4</li> <li>- a statement certifying which form of vector attraction reduction is being used and that Class A pathogen requirements are being met</li> <li>- a description of how the Class B pathogen requirements are being met</li> <li>- a description of how the vector attraction reduction is being met when it is used.</li> </ul> <p>Verify that the following information is retained for 5 yr by the person who applies the sludge:</p> <ul style="list-style-type: none"> <li>- a statement certifying that appropriate management practices and application procedures are being used</li> <li>- a description of how required management practices are implemented</li> <li>- a description of how site restrictions are being met</li> <li>- a description of how the vector reduction requirements are met when they are used.</li> </ul>

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**10-46.** When bulk sewage sludge that meets the limitations in Appendix 10-2, is applied to agricultural land, forest, a public contact site, or reclamation site, specific reporting requirements must be met (40 CFR 503.17(a)(5)).

Determine if the facility applies bulk sewage sludge to agricultural land, forest, a public contact site or reclamation site.

Verify that it meets the requirements in Appendix 10-2.

Verify that the following information is retained for 5 yr by the person who prepares the sludge:

- the concentration of each pollutant listed in Appendix 10-2
- a statement certifying which form of vector attraction reduction is being used and that pathogen requirements are being met
- a description of how the pathogen requirements are being met
- a description of how the vector attraction reduction is being met when used.

Verify that the following information is retained indefinitely by the person who applies the sludge:

- the concentration of each pollutant listed in Appendix 10-2
- the number of hectares in each site upon which bulk sewage sludge is applied
- the date and time bulk sewage sludge is applied to each site
- the cumulative amount of each pollutant from Appendix 10-2 in the bulk sewage sludge applied to each site
- amount applied to each site
- a certification statement indicating that required information for each site has been obtained
- a description of how the requirements to obtain information were met.

Verify that the following information is retained for 5 yr by the person applying the sludge:

- a statement certifying that appropriate management practices and application procedures are being used
- a description of how required management practices are implemented
- a certification statement that Class B pathogen requirements are being met
- a description of how site restrictions are being met
- a certification statement that vector reduction requirements are met
- a description of how vector reduction requirements are being met.



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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS July 1995</b>
<p><b>10-47.</b> When bulk sewage sludge is given away or sold in a bag or container and it meets the requirements in Appendix 10-5, specific record keeping requirements must be met (40 CFR 503.17 (a)(6)).</p>	<p>Determine if the facility sells or gives bulk sewage sludge away in a bag or container.</p> <p>Verify that it meets the requirements in Appendix 10-5.</p> <p>Verify that the following information is retained for 5 yr by the person who prepares the sludge:</p> <ul style="list-style-type: none"> <li>- the annual whole sludge application rate for the sewage sludge that does not cause the annual pollutant rates in Appendix 10-5 to be exceeded</li> <li>- the concentration of each pollutant listed in Appendix 10-5</li> <li>- a statement certifying which vector attraction reduction is being used and that Class A pathogen requirements are being met</li> <li>- a description of how the Class A pathogen requirements are being met</li> <li>- a description of how the vector attraction reduction is being met.</li> </ul>
<p><b>10-48.</b> When domestic septage is applied to agricultural land, forest, or a reclamation site, specific reporting requirements must be met (40 CFR 503.1 (b)).</p>	<p>Determine if the facility applies domestic septage to agricultural land, forest, a public contact site, or reclamation site.</p> <p>Verify that the following information is retained for 5 yr by the person who applies the domestic septage:</p> <ul style="list-style-type: none"> <li>- the location of each site on which domestic septage is applied</li> <li>- the number of acres in each site on which domestic septage is applied</li> <li>- the date and time of application at each site</li> <li>- the nitrogen requirements for the crop or vegetation grown on each site during a 365-day period</li> <li>- the rate in gal/acre per 365-day period at which domestic septage is applied to each site</li> <li>- a statement certifying which vector attraction reduction is being used and that pathogen requirements are being met</li> <li>- a description of how the Class A pathogen requirements are being met</li> <li>- a description of how the pathogen requirements are being met</li> <li>- a description of how the vector attraction reduction is being met.</li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS July 1995</b>
<p><b>10-49.</b> Class I sludge management facilities, POTW/FOTWs with a design flow rate equal to or greater than 1 million gal/day [3,785,412 L/day], and POTW/FOTWs that serve 10,000 people or more are required to submit specific information to the permitting authority (40 CFR 503.18).</p>	<p>Verify that the following information is submitted to the permitting authority by 19 February of each year:</p> <ul style="list-style-type: none"> <li>- the concentration of each pollutant listed in Appendix 10-5</li> <li>- a statement certifying which form of vector attraction reduction is being used and that Class A pathogen requirements are being met</li> <li>- a description of how the Class A pathogen requirements are being met</li> <li>- a description of how the vector attraction reduction is being met.</li> </ul> <p>Verify that the following information is submitted on 19 February of each year when 90 percent or more of any of the cumulative loading rates in Appendix 10-2 are met:</p> <ul style="list-style-type: none"> <li>- the concentration of each pollutant listed in Appendix 10-2</li> <li>- the number of hectares in each site upon which bulk sewage sludge is applied</li> <li>- the date and time bulk sewage sludge is applied to each sites</li> <li>- the cumulative amount of each pollutant from Appendix 10-2 in the bulk sewage sludge applied to each site</li> <li>- amount applied to each site</li> <li>- a certification statement indicating that required information for each site has been obtained</li> <li>- a description of how the requirements to obtain information were met.</li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS July 1995</b>
<p><b>SURFACE DISPOSAL OF SLUDGE</b></p> <p><b>General</b></p> <p><b>10-50.</b> An active sewage sludge unit that is located within 60 m [196.85 ft] of a fault that has displacement in Holocene time, is located in an unstable area, or located in a wetland is required to close by 19 February 1994 (40 CFR 503.22 (b)).</p> <p><b>10-51.</b> The facility is required to submit a written closure and post-closure plan that meets specific requirements to the permitting authority 180 days prior to the date of closure (40 CFR 503.22(c)).</p>	<p>(NOTE: The requirements concerning surface disposal of sludge do not apply to sewage sludge stored on the land or to the land on which sewage sludge is stored. It also does not apply to sewage sludge that remains on the land for longer than 2 yr when the facility who prepares the sewage sludge demonstrates that the land on which the sewage sludge remains is not an active sewage sludge unit. It also does not apply to sewage treated on the land or to the land on which the sewage sludge is treated (40 CFR 503.20(b) and 503.20(c).)</p> <p>Determine if the facility has a sewage sludge unit that is located within 60 m [196.85] of a fault that has displacement in Holocene time, is located in an unstable area, or is located in a wetland.</p> <p>Verify that the unit was closed by 19 February 1994 unless otherwise stipulated by the permitting authority.</p> <p>Determine if the facility is planning on closing an active sewage sludge unit or has recently closed a sewage sludge unit.</p> <p>Verify that the closure and post-closure plan was submitted to the permitting authority at least 180 days in advance of closure and the plan contained the following:</p> <ul style="list-style-type: none"> <li>- a discussion of how the leachate collection system will be operated and maintained for 3 yr after closure if the unit has a liner and leachate collection system</li> <li>- a description of the system used to monitor for methane gas in the air in any structure within the surface disposal site and in the air at the property line</li> <li>- a discussion of how public access will be restricted for 3 yr after closure.</li> </ul> <p>Verify that, if there are plans to turn the surface disposal site over to another owner, the facility notifies the subsequent owner that sewage sludge was placed on the land.</p>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS July 1995</b>
<p><b>10-52.</b> Active sewage sludge units without a liner and leachate collection system are required to meet specific standards (40 CFR 503.23(a)(1) and 503.23(b)).</p>	<p>Verify that following concentrations are not exceeded in sewage sludge placed on an active sewage sludge unit:</p> <ul style="list-style-type: none"> <li>- arsenic: 73 mg/kg</li> <li>- chromium: 600 mg/kg</li> <li>- nickel: 420 mg/kg.</li> </ul> <p>(NOTE: Amounts are based on a dry weight basis.)</p>
<p><b>10-53.</b> Active sewage sludge units without a liner and leachate collection system with a boundary less than 150 m [492.13 ft] from the property line of the surface disposal site are required to meet specific requirements (40 CFR 503.23(a)(2) and 503.23(b)).</p>	<p>Verify that the concentration of each pollutant listed in Appendix 10-7 are not exceeded in relation to the listed distances.</p> <p>(NOTE: At the time of the permit application, the owner/operator of the site may ask for site specific pollutant limits.)</p>
<p><b>10-54.</b> Sewage sludge units are required to be operated according to specific operation and management standards (40 CFR 503.24).</p>	<p>Verify that sewage sludge is not placed in an active sewage sludge unit if it is likely to adversely affect a threatened or endangered species or its critical habitat.</p> <p>Verify that active sewage sludge units:</p> <ul style="list-style-type: none"> <li>- do not restrict the flow of a base flood</li> <li>- are located 60 m [196.85 ft] or more from a fault that has displacement in Holocene time, unless otherwise specified by the permitting authority</li> <li>- are not located in an unstable area</li> <li>- it will not contaminate an aquifer</li> <li>- are not located in a wetland unless by permit.</li> </ul> <p>(NOTE: The results of a groundwater monitoring program developed by a qualified groundwater scientist or a certification by a qualified groundwater scientist will be used to demonstrate that sewage sludge placed on an active sewage sludge unit does not contaminate an aquifer.)</p> <p>Verify that, when a surface disposal site is located in a seismic impact zone, the unit is designed to withstand the maximum recorded horizontal ground level acceleration.</p>

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<b>10-54. (continued)</b>	<p>Verify that, for runoff, the following occurs:</p> <ul style="list-style-type: none"> <li>- the runoff is collected and disposed of in accordance with an NPDES permit</li> <li>- the runoff collection system has the capacity to handle runoff from a 24-h, 25-yr storm event.</li> </ul> <p>Verify that leachate is handled so that:</p> <ul style="list-style-type: none"> <li>- the leachate collection system for an active sewage sludge unit that has a liner and leachate collection system is operated and maintained during the period the sewage sludge unit is active and for 3 yr thereafter</li> <li>- leachate from an active sewage sludge unit that has a liner and a leachate collection system is collected and disposed of in accordance with the applicable requirements from when the unit is active and for 3 yr thereafter.</li> </ul> <p>Verify that the following occurs when a cover is placed on a sewage sludge unit:</p> <ul style="list-style-type: none"> <li>- the concentration of methane gas in the air in any structure within the surface disposal site of an active unit does not exceed 25 percent of the lower explosive limit for methane gas during the period that the unit is active and the concentration of the methane gas in air at the property line of the surface disposal site does not exceed the lower explosive limit for methane gas during the period that the sewage sludge unit is active</li> <li>- at closure when the final cover is placed the concentration of methane gas in air in any structure within any structure within the surface disposal site does not exceed 25 percent of the lower explosive limit for methane gas for 3 yr after the unit closes and the concentration of methane gas in air at the property line of the unit does not exceed the lower explosive limit for methane gas 3 yr after closure unless otherwise specified by the permitting authority.</li> </ul> <p>(NOTE: The lower explosive limit for methane is 5.0 percent by volume.)</p> <p>Verify that a food or feed crop or a fiber crop are not grown on an active sewage sludge unit unless it has been demonstrated to the permitting authority that through management practices, public health and the environment are protected from any reasonably anticipated adverse effects.</p> <p>Verify that animals are not grazed on an active sewage sludge unit unless it has been demonstrated to the permitting authority that through management practices, public health and the environment are protected from any reasonably anticipated adverse effects.</p>

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<b>10-54. (continued)</b>	<p>Verify that public access is restricted for the period that the surface disposal site contains an active unit, and for 3 yr after the last active sewage sludge unit in the surface disposal site closes.</p>
<b>10-55.</b> Class A or one of the Class B pathogen requirements (see definitions) must be met when placing sewage sludge on an active sewage sludge unit unless it is covered with soil or other material at the end of each operating day (40 CFR 503.25(a)).	<p>Determine if the sewage sludge meets Class A or one of the Class B pathogen requirements.</p> <p>Verify that, if the sludge does not meet pathogen requirements, it is covered with soil or other material at the end of each operating day.</p>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS July 1995</b>
<p><b>10-56.</b> Vector attraction reduction must be done when sewage sludge or domestic septage is placed on an active sewage sludge unit (40 CFR 503.25(b) and 503.25(c)).</p>	<p>Verify that, when sewage sludge is placed on an active sewage sludge unit, one of the following vector attraction reduction requirements is done:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period are reduced by less than 17 percent, vector attraction reduction is achieved.</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [86 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period are reduced by less than 15 percent, vector attraction reduction is achieved.</li> </ul> </li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [86 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials</li> <li>- sewage sludge is injected below the surface of the land: <ul style="list-style-type: none"> <li>- no significant amount of the sewage sludge is present on the land surface within 1 h after injection</li> <li>- when the sludge that is injected is Class A with respect to pathogens, the sludge is injected below the land surface within 8 h after being discharged from the pathogen treatment process</li> </ul> </li> </ul>

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**10-56. (continued)**

- sewage sludge applied to a land surface or placed on a surface disposal site is incorporated into the soil within 6 h after application to or placement on the land. When sludge incorporated into the soil is Class A, the sewage sludge is applied to or placed on the land within 8 h after being discharged from the pathogen treatment process

- the sewage sludge placed on an active sewage sludge unit is covered with soil or other material at the end of each operating day.

Verify that, when domestic septage is placed on an active sewage sludge unit, one of the following vector attraction reduction requirements is done:

- sewage sludge is injected below the surface of the land such that:
  - no significant amount of the sewage sludge is present on the land surface within 1 h after injection
  - when the sludge that is injected in Class A with respect to pathogens, the sludge is injected below the land surface within 8 h after being discharged from the pathogen treatment process
- sewage sludge applied to a land surface or placed on a surface disposal site is incorporated into the soil within 6 h after application to or placement on the land. When sludge incorporated into the soil is Class A, the sewage sludge is applied to or placed on the land within 8 h after being discharged from the pathogen treatment process
- the sewage sludge placed on an active sewage sludge unit is covered with soil or other material at the end of each operating day
- the pH of the domestic septage is raised to 12 or higher by alkali addition and, without the addition of more alkali, remains at 12 or higher for 30 min.



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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS July 1995</b>
<p><b>SURFACE DISPOSAL OF SLUDGE</b></p> <p><b>Monitoring and Documentation</b></p> <p><b>10-57.</b> Monitoring for pollutants, pathogens, and vector attraction reduction requirements for sewage sludge placed on an active sewage sludge unit must be done according to the frequency in Appendix 10-6 (40 CFR 503.26(a)).</p> <p><b>10-58.</b> If, when domestic septage is placed on an active sewage sludge unit, the pH of the septage is raised to 12 or higher by alkali addition and remains at 12 or higher without alkali addition for 30 min, each container of domestic septage must be monitored (40 CFR 503.26(b)).</p> <p><b>10-59.</b> In specific circumstances air in structures within a surface disposal site and at property lines of the surface disposal site are required to be monitored continuously for methane gas (40 CFR 503.26(c)).</p>	<p>Verify that monitoring for pollutants, pathogens, and vector attraction reduction requirements for sewage sludge placed on an active sewage sludge unit is done according to the frequency in Appendix 10-6.</p> <p>(NOTE: The permitting authority may reduce the frequency of monitoring.)</p> <p>Verify that, when domestic septage is placed on an active sewage sludge unit and the pH of the septage is raised to 12 or higher by alkali addition and remains at 12 or higher without alkali addition for 30 min, each container of domestic septage is monitored.</p> <p>Verify that continuous monitoring occurs during the period that the surface disposal site contains an active sewage sludge unit on which the sewage sludge is covered and for 3 yr after a unit closes when a final cover is placed on the sewage sludge.</p>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS July 1995</b>
<p><b>10-60.</b> Specific record-keeping requirements must be met when sewage sludge, other than domestic septage, is placed on an active sewage sludge unit (40 CFR 503.27(a)).</p>	<p>Verify that the person who prepares sewage sludge retains the following information for 5 yr:</p> <ul style="list-style-type: none"> <li>- the concentration of arsenic, chromium, and nickel in the sludge</li> <li>- a statement certifying that pathogen and vector attraction reduction requirements are being met</li> <li>- a description of how the pathogen requirements are being met when done</li> <li>- a description of how the vector attraction reduction requirements are being met when done.</li> </ul> <p>Verify that the operator of the surface disposal site retains the following for 5 yr:</p> <ul style="list-style-type: none"> <li>- the concentrations of the pollutants listed in Appendix 10-7</li> <li>- a statement certifying that management practices and vector attraction reduction requirement are being met</li> <li>- a description of how the management practices are being met</li> <li>- a description of how the vector attraction reduction requirements are being met when they are done.</li> </ul>
<p><b>10-61.</b> Specific record-keeping requirements must be met when domestic septage is placed on an active sewage sludge unit (40 CFR 503.27(b)).</p>	<p>Verify that the person who applies domestic septage with a pH of greater than 12 retains the following information for 5 yr:</p> <ul style="list-style-type: none"> <li>- a statement certifying that vector attraction reduction requirements are being met</li> <li>- a description of how the vector attraction reduction requirements are being met when done.</li> </ul> <p>Verify that the operator of the surface disposal site retains the following for 5 yr:</p> <ul style="list-style-type: none"> <li>- a statement certifying that management practices and vector attraction reduction requirement are being met</li> <li>- a description of how the management practices are being met</li> <li>- a description of how the vector attraction reduction requirements are being met when they are done.</li> </ul>

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**10-62.** Class I sludge management facilities, POTW/FOTWs with a design flow rate equal to or greater than 1 million gal/day [3,785,412 L/day], and POTW/FOTWs that serve 10,000 people or more are required to submit specific information to the permitting authority on 19 February of each year (40 CFR 503.28).

Verify that the following information is submitted to the permitting authority on 19 February of each year:

- the concentration of arsenic, chromium and nickel in the sludge
- a statement certifying that management practices and pathogen and vector attraction reduction requirements are being met
- a description of how the pathogen requirements are being met when done
- a description of how the vector attraction reduction requirements are being met when done
- the concentrations of the pollutants listed in Appendix 10-7
- a description of how the management practices are being met.



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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS July 1995</b>
<p><b>SLUDGE INCINERATION</b></p> <p><b>10-63.</b> Facilities with incinerators that fire sewage sludge must meet specific emissions standards (40 CFR 503.43(a) and 503.43(b)).</p> <p><b>10-64.</b> Sewage sludge being fed to an incinerator is required to meet specific concentration limitations for lead, arsenic, cadmium, and nickel (40 CFR 503.43 (c) and 503.43(d)).</p> <p><b>10-65.</b> The concentration of total hydrocarbons in the exit gas from a sewage sludge incinerator must meet specific limits (40 CFR 503.44).</p>	<p>Verify that incinerators that fire sewage sludge meet the requirements on beryllium and mercury emissions outlined in 40 CFR 61.30 through 61.34 and 61.50 through 61.56.</p> <p>Verify that the daily concentration of lead in sewage sludge fed to a sewage sludge incinerator does not exceed the concentration calculated using Formula 1 in Appendix 10-8.</p> <p>Verify that the daily concentration of arsenic, cadmium, chromium, and nickel do not exceed the concentrations calculated using Formula 2 in Appendix 10-8.</p> <p>Verify that the monthly average concentration for total hydrocarbons in the exit gas, corrected to 0 percent moisture using the correction factor from Formula 1 of Appendix 10-9 and to 7 percent oxygen using the correction factor from Formula 2 does not exceed 100 ppm on a volumetric basis.</p>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS July 1995</b>
<p><b>10-66.</b> Sewage sludge incinerators are required to have continuous monitoring devices for hydrocarbons and oxygen in the exit gas, and a continuous monitoring for combustion temperature, as specified by the permitting authority (40 CFR 503.45(a) through 503.45(f)).</p>	<p>Determine what the permitting authority has specified in terms of continuous monitors for combustion temperature, and hydrocarbons and oxygen in the exit gas.</p> <p>Verify that the required monitors are in place and operational.</p> <p>(NOTE: The requirement for continuous monitors for hydrocarbons is effective 19 February 1994 unless construction of new pollution control facilities is required, in which case the compliance date is 19 February 1995.)</p> <p>(NOTE: The requirements for monitors for total hydrocarbons does not apply if the following conditions are met:</p> <ul style="list-style-type: none"> <li>- the exit gas from a sewage sludge incinerator stack is monitored continuously for CO</li> <li>- the monthly average concentration of CO in the exit gas from a sewage sludge incinerator stack, corrected for zero percent moisture and to 7 percent oxygen, does not exceed 100 ppm on a volumetric basis</li> <li>- the person who fires the sewage sludge incinerator retains the following information for 5 yr: <ul style="list-style-type: none"> <li>- the CO concentrations in the exit gas</li> <li>- a calibration and maintenance log for the instrument used to measure the CO concentration</li> </ul> </li> <li>- Class I sludge management facilities, POTWs with a design flow rate equal to or greater than 1 million gal/day, and POTWs that serve a population of 10,000 people or greater submit the monthly average CO concentrations in the exit gas to the permitting authority on 19 February of each year.)</li> </ul>
<p><b>10-67.</b> Sewage sludge must not be fired in a sewage sludge incinerator if it is likely to affect a threatened or endangered species (40 CFR 503.45 (g)).</p>	<p>Determine if the facility has any endangered or threatened species which might be affected by the firing of the incinerator.</p>
<p><b>10-68.</b> Monitoring for arsenic, chromium, lead, and nickel shall be done at the frequency outlined in Appendix 10-6 (40 CFR 503.46).</p>	<p>Verify that monitoring is done at the frequency outlined in Appendix 10-6.</p> <p>(NOTE: After 2 yr of monitoring the permitting authority might reduce the required frequency.)</p> <p>(NOTE: Beryllium, mercury, and air pollution control device operating parameters will be monitored at the frequency designated by the permitting authority.)</p>

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**10-68. (continued)**

(NOTE: The requirements for monitors for total hydrocarbons does not apply if the following conditions are met:

- the exit gas from a sewage sludge incinerator stack is monitored continuously for CO
- the monthly average concentration of CO in the exit gas from a sewage sludge incinerator stack, corrected for zero percent moisture and to 7 percent oxygen, does not exceed 100 ppm on a volumetric basis
- the person who fires the sewage sludge incinerator retains the following information for 5 yr:
  - the CO concentrations in the exit gas
  - a calibration and maintenance log for the instrument used to measure the CO concentration
- Class I sludge management facilities, POTWs with a design flow rate equal to or greater than one million gal per day, and POTWs that serve a population of 10,000 people or greater submit the monthly average CO concentrations in the exit gas to the permitting authority on 19 February of each year.)

- the exit gas from a sewage sludge incinerator stack is monitored continuously for CO
- the monthly average concentration of CO in the exit gas from a sewage sludge incinerator stack, corrected for zero percent moisture and to 7 percent oxygen, does not exceed 100 ppm on a volumetric basis
- the person who fires the sewage sludge incinerator retains the following information for 5 yr:
  - the CO concentrations in the exit gas
  - a calibration and maintenance log for the instrument used to measure the CO concentration
- Class I sludge management facilities, POTWs with a design flow rate equal to or greater than one million gal per day, and POTWs that serve a population of 10,000 people or greater submit the monthly average CO concentrations in the exit gas to the permitting authority on 19 February of each year.)

**10-69.** Individuals who fire sewage sludge in an incinerator are required to keep specific information on file for 5 yr (40 CFR 503.47).

- the concentration of lead, arsenic, cadmium, chromium, and nickel in the sewage sludge fed to the incinerator
- the total hydrocarbons concentration in the exit gas from the sewage sludge incinerator stack
- information that indicates the National Emissions Standards for beryllium and mercury are met
- the combustion temperatures, including the maximum combustion temperature for the incinerator
- values for the air pollution control device operating parameters
- the oxygen concentrations and information used to measure moisture content in the exit gas from the sewage sludge incinerator stack
- the sewage sludge feed rate
- the stack height for the incinerator
- the dispersion factor for the site where the incinerator is located
- the control efficiency for lead, arsenic, cadmium, chromium, and nickel for each incinerator
- the risk specific concentrations for chromium
- a calibration and maintenance log for the instruments used to measure the total hydrocarbons and oxygen content in the exit gas and the combustion temperature.

- the concentration of lead, arsenic, cadmium, chromium, and nickel in the sewage sludge fed to the incinerator
- the total hydrocarbons concentration in the exit gas from the sewage sludge incinerator stack
- information that indicates the National Emissions Standards for beryllium and mercury are met
- the combustion temperatures, including the maximum combustion temperature for the incinerator
- values for the air pollution control device operating parameters
- the oxygen concentrations and information used to measure moisture content in the exit gas from the sewage sludge incinerator stack
- the sewage sludge feed rate
- the stack height for the incinerator
- the dispersion factor for the site where the incinerator is located
- the control efficiency for lead, arsenic, cadmium, chromium, and nickel for each incinerator
- the risk specific concentrations for chromium
- a calibration and maintenance log for the instruments used to measure the total hydrocarbons and oxygen content in the exit gas and the combustion temperature.

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS July 1995</b>
<p><b>10-69. (continued)</b></p>	<p>(NOTE: The requirements for recordkeeping for total hydrocarbons does not apply if the following conditions are met:</p> <ul style="list-style-type: none"> <li>- the exit gas from a sewage sludge incinerator stack is monitored continuously for CO</li> <li>- the monthly average concentration of CO in the exit gas from a sewage sludge incinerator stack, corrected for zero percent moisture and to 7 percent oxygen, does not exceed 100 ppm on a volumetric basis</li> <li>- the person who fires the sewage sludge incinerator retains the following information for 5 yr: <ul style="list-style-type: none"> <li>- the CO concentrations in the exit gas</li> <li>- a calibration and maintenance log for the instrument used to measure the CO concentration</li> </ul> </li> <li>- Class I sludge management facilities, POTWs with a design flow rate equal to or greater than one million gal per day, and POTWs that serve a population of 10,000 people or greater submit the monthly average CO concentrations in the exit gas to the permitting authority on 19 February of each year.)</li> </ul>
<p><b>10-70.</b> Class I sludge management facilities, POTWs with a design flow rate equal to or greater than 1 million gal/day [3,785,412 L/day], and POTWs that serve 10,000 people or more are required to submit specific information to the permitting authority (40 CFR 503.46).</p>	<p>Verify that the following information pertaining to incinerators is submitted to the permitting authority by 19 February of each year:</p> <ul style="list-style-type: none"> <li>- the concentration of lead, arsenic, cadmium, chromium, and nickel in the sewage sludge fed to the incinerator</li> <li>- the total hydrocarbons concentration in the exit gas from the sewage sludge incinerator stack</li> <li>- information that indicates the National Emissions Standards for beryllium and mercury are met</li> <li>- the combustion temperatures, including the maximum combustion temperature for the incinerator</li> <li>- values for the air pollution control device operating parameters</li> <li>- the oxygen concentrations and information used to measure moisture content in the exit gas from the sewage sludge incinerator stack</li> <li>- the sewage sludge feed rate</li> <li>- the stack height for the incinerator</li> <li>- the dispersion factor for the site where the incinerator is located</li> <li>- the control efficiency for lead, arsenic, cadmium, chromium, and nickel for each incinerator</li> <li>- the risk specific concentrations for chromium</li> <li>- a calibration and maintenance log for the instruments used to measure the total hydrocarbons and oxygen content in the exit gas and the combustion temperature.</li> </ul>



## Appendix 10-1

### (40 CFR 503)

#### Relevant Dates for the Sewage Sludge Program

Publication of Part 503 in 58 FR 9248.	19 February 1993
Publication of amendments to Sewage Sludge Permit Program regulations in 58 FR 9404.	19 February 1993
Effective date of Part 503.	22 March 1993
Requirements for monitoring and recordkeeping under Part 503 become effective (except for THC).	20 July 1993
Permit applications due from facilities required to have (or requesting) site-specific limits.	18 August 1993
Compliance date for part 503 requirements other than monitoring, recordkeeping and reporting (where construction is not required).	19 February 1993
Requirements for monitoring, recordkeeping and reporting for THC under Part 503 become effective (where construction is not required).	19 February 1993
Requirements for reporting under Part 503 become effective.	19 February 1993
Limited permit application information due from sludge-only facilities (not needing site-specific limits).	19 February 1993
Due for closure of active sewage sludge units:	22 March 1993
1. located within 60 m of a fault that has displacement in Holocene time (unless authorized by the permitting authority)	
2. located in a wetland (unless authorized under an NPDES permit)	
3. located in an unstable area.	
Compliance date for Part 503 requirements other than monitoring, recordkeeping, and reporting (where construction is required).	19 February 1993
Requirements for monitoring, recordkeeping, and reporting for THC under Part 503 become effective (where construction is required).	19 February 1993
Date when active sewage sludge unit owners/operators must submit closure plans.	180 days prior to the date the unit closes
Permit application information due from facilities with NPDES permits (not needing site-specific limits).	At the time of the next NPDES permit renewal
Permit application information due from facilities who commence operations after 19 February 1993.	180 days prior to the date proposed for commencing operation



## Appendix 10-2

### Cumulative Pollutant Loading Rates for Sludge (40 CFR 503.13(b)(2))

Pollutant	Cumulative Pollutant Loading Rate (kg/hectare)
Arsenic	41
Cadmium	39
Chromium	3000
Copper	1500
Lead	300
Mercury	17
Nickel	420
Selenium	100
Zinc	2800



### Appendix 10-3

#### Ceiling Concentrations for Sludge (40 CFR 503.13(b)(1))

Pollutant	Ceiling Concentration (mg/kg, dry weight basis)
Arsenic	75
Cadmium	85
Chromium	3000
Copper	4300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7500



#### Appendix 10-4

#### Pollutant Concentrations for Sludge (40 CFR 503.13(b)(3))

Pollutant	Monthly Average Concentrations (mg/kg, dry weight basis)
Arsenic	41
Cadmium	39
Chromium	1200
Copper	1500
Lead	300
Mercury	17
Nickel	420
Selenium	36
Zinc	2800





## Appendix 10-5

### Annual Pollutant Loading Rates (40 CFR 503.13(b)(4))

Pollutant	Annual Pollutant Loading Rates (kg/hectare/ 365 day period)
Arsenic	2.0
Cadmium	1.0
Chromium	150
Copper	75
Lead	15
Mercury	0.85
Nickel	21
Selenium	5.0
Zinc	140



## Appendix 10-6

### Frequency of Monitoring - Land Application, Surface Disposal, and Incineration (40 CFR 503.16, Table 1, 503.26, Table 1, 503.46, Table 1)

Amount of Sewage sludge* (metric tons/365-day period) [long ton/365 days]	Frequency
Greater than zero but less than 290 [285.42]	Once per year
Equal to or greater than 290 [285.42] but less than 1500 [1476.31]	Once per quarter (four times per year)
Equal to or greater than 1500 [1476.31] but less than 15,000 [14,763.1]	Once per 60 days (six times per year)
Equal to or greater than 15,000 [14,763.1]	Once per month

\* Either the amount of bulk sewage sludge applied to the land or the amount of sewage sludge received by a person who prepares sewage sludge that is sold or given away in a bag or other container for application to the land (dry weight basis).



## Appendix 10-7

### Pollutant Concentrations for an Active Sewage Sludge Unit (40 CFR 503.23, Table)

Unit Boundary to Property Site	Pollutant Concentration <sup>1</sup>		
(Distance in meters)	Arsenic mg/kg	Chromium mg/kg	Nickel mg/kg
0 to less than 25	30	200	210
25 to less than 50	34	220	240
50 to less than 75	39	260	270
75 to less than 100	46	300	320
100 to less than 125	53	360	390
125 to less than 150	62	450	420

<sup>1</sup> Dry weight basis



## Appendix 10-8

### Lead Concentration in Sewage Sludge Fed to an Incinerator (40 CFR 503.43)

#### Formula 1:

$$C = \frac{0.1 \times \text{NAAQS} \times 86,400}{\text{DF} \times (1 - \text{CE}) \times \text{SF}}$$

Where:

- C - Daily concentration of lead in sewage sludge in mg/kg of total solids (dry weight basis).
- NAAQS - National Ambient Air Quality Standards for lead in  $\mu\text{m}/\text{m}^3$ .
- DF - Dispersion Factor in  $\mu\text{m}/\text{m}^3/\text{g/s}$ .
- CW - Sewage sludge incinerator control efficiency for lead in hundreths.
- SF - Sewage sludge feed rate in metric tons/day (dry weight basis).

#### Formula 2:

$$C = \frac{\text{RSC} \times 86,400}{\text{DF} \times (1 - \text{CE}) \times \text{SF}}$$

Where:

- C - Daily concentrations of arsenic, cadmium, chromium, or nickel in sewage sludge in mg/kg of total solids (dry weights basis).
- CE - Sewage sludge incinerator control efficiency for arsenic, cadmium, chromium, or nickel in hundreths.
- DF - Dispersion Factor in  $\mu\text{m}/\text{m}^3/\text{g/s}$ .
- RSC - Risk specific concentration in  $\mu\text{m}/\text{m}^3$ .
- SF - Sewage sludge feed rate in metric tons/day (dry weight basis).





**Appendix 10-9**  
**Total Hydrocarbon Operational Standards**  
**(40 CFR 503.44)**

**Formula 1:**

$$\text{Corrective Factor (percent moisture)} = \frac{1}{(1 - X)}$$

Where:

X - decimal fraction of the percent moisture in the sewage sludge incinerator exit gas in hundredths.

**Formula 2:**

$$\text{Corrective Factor (oxygen)} = \frac{14}{(21 - Y)}$$

Where:

Y - Percent oxygen concentration in the sewage sludge incinerator stack exit gas (dry volume/dry volume).



<b>FACILITY:</b>	<b>COMPLIANCE CATEGORY:</b> <b>WASTEWATER MANAGEMENT</b> Fish and Wildlife Service	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> NA      C      RMA	<b>REVIEWER CHECKS:</b>		